



2026

NAPA URBAN FORESTRY MANAGEMENT PLAN



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- **Risk Management**
- **Participating Stakeholders**
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Funding for the City of Napa Urban Forestry Management Plan has been provided by the State General Fund as administered by the California Department of Forestry and Fire Protection (CAL FIRE) Urban and Community Forestry Program.



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EXECUTIVE SUMMARY

PLANNING PROCESS

This 40-year Urban Forestry Management Plan (“Plan”) benchmarks the current urban forest conditions and provides a roadmap toward the urban forest of the future, guided by the community, managing partners, City staff, and best management practices in urban forestry.

What do we have?

Napa is a vibrant and modern community with respect for its colorful past. A popular tourist destination, the city is built along the Napa River and adjoining creeks and channels. The remnant native oak trees and restored riparian habitat provide the community with a strong human-connection to nature. Planted trees line the streets, surround homes and buildings, and are scattered throughout the park system. These trees make up the urban forest and are relied upon by the community each day.

Napa’s Trees

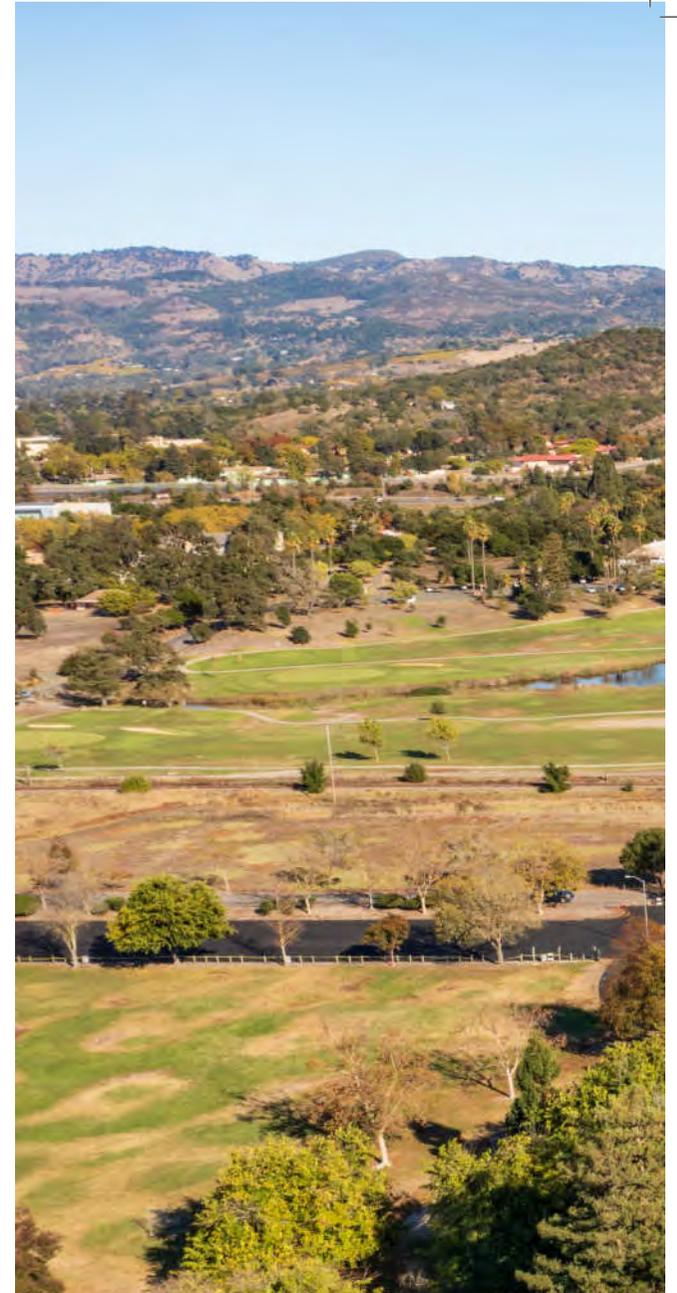
The City of Napa conducted a land cover assessment in 2024 to capture an aerial view of the city’s tree canopy and other land cover. This assessment approximated **21.5%** canopy cover in Napa. **Napa’s relatively high canopy cover resulted in Plan recommendations that focus on maintaining and enhancing canopy where possible.** Additional analyses were conducted to see where changes in canopy change occurred through time; investigate tree canopy by different land use and ownership designations; and, to quantify the ecosystem services provided by Napa’s urban forest.

Over their lifespans, **Napa’s trees have collectively removed 325,670 tons of carbon from the atmosphere, valued at \$15.1 million.** And each year, they provide quantifiable benefits totaling more than \$2.7 million—including: 225,780 pounds of pollutants removed. 52.9 million gallons of stormwater intercepted and absorbed. 4,500 tons of carbon dioxide (CO₂) sequestered. In addition to their environmental benefits, trees support physical and mental health, increase property values, reduce energy costs, lower crime rates, and help create more successful business districts.

Management of Napa’s Urban Forest

Napa’s urban forestry maintenance and enhancement is primarily led by staff in the Parks and Recreation Services Department and private property owners. The City of Napa is responsible for the care of downtown street trees, trees in landscape medians, trees located at City facilities, and park trees. The City also plants trees in public spaces; working with property owners adjacent to street trees to determine the desired species and provide information on routine maintenance. Adjacent property owners are responsible for street tree maintenance (tree pruning, tree removal, stump removal, and coordination during replacement planting). The Department uses a tree permitting system that applies to the care of protected trees, including street trees, significant trees, and native trees of a certain size and species on private properties over one acre. City staff responds to tree related emergencies and ensures priority maintenance related to public safety occurs.

Trees require proactive and routine maintenance to ensure a resilient, safe, and sustainable resource. This Plan serves as a guide for the City of Napa to build on their already strong urban forestry program and preservation practices throughout the city.





INTRODUCTION

The trees and tree canopy that make up Napa's urban forest provide a variety of different physical, social, economic, and aesthetic benefits that continuously mitigate the effects of urbanization and development and protect and enhance lives within the community. Trees are the one of the only types of infrastructure a city can invest in that will become more valuable over time, as the benefits provided by trees grow as they grow. Large, healthy mature trees with greater leaf surface area provide greater benefits to the community than smaller-statured or less healthy trees (Clark et al 1997), indicating the value of protecting, preserving, promoting, and planning for Napa's trees.

THE IMPORTANCE OF TREES

Trees have been shown to provide a number of benefits, including:

Improve air quality by filtering pollutants and absorbing gases (Karl 2010). Napa's trees intercept particulate matter (PM_{2.5} and PM₁₀) such as dust, pollen, and smoke; absorb harmful gaseous pollutants like ozone (O₃), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂); and even emit beneficial oxygen.

Improve water quality by intercepting stormwater (McPherson et al 2002; Xiao et al 1998). Tree leaves and roots reduce runoff volumes and rates, increase soil infiltration, lessen erosion effects, and filter harmful water pollutants.

Reduce carbon dioxide (CO₂) in the atmosphere by sequestering carbon and storing it in woody biomass (Garvey et al 2022). Additionally, trees further reduce CO₂ emissions by lowering the demand for energy and the corresponding consumption of electrical energy or natural gas.

Reduce energy use by shading and sheltering buildings, which can reduce both cooling costs during the summer and heating costs during the winter (Akbari et al 1997; Ellison et al 2017).

Reduce urban heat island effects by shading surfaces and cooling the air (Akbari et al 1997; McDonald et al 2016). Temperatures in urban environments can be significantly greater than temperatures in surrounding regions, but trees provide shade for sidewalks, asphalts, buildings, and other impervious surfaces which reduces the amount of radiant energy absorbed and stored by hardscapes and thereby lowers ambient temperatures in those areas.

Support wildlife by providing critical habitat and connectivity. Increased canopy density and vegetative cover supports birds and bats (Threlfall et al 2016); mammals, insects, fish, and other aquatic species (Pena et al 2017); dispersal of other flora (Fernandez-Juricic, 2001; Dwyer et al 1992); and even soil organisms (Kooch et al 2018).



CRAPE MYRTLE *Lagerstroemia spp.*

Replacement Value	Total Annual Benefits
\$9,077,900	\$10,108
Carbon Stored	Annual Carbon Sequestered
573.35 tons	43.38 tons/yr.
Average Trunk Diameter	Air Pollution Removal
6.3"	0.25 tons/yr.
Trees Planted	Avoided Runoff
6,325	218,647 gallons/yr.



COAST LIVE OAK *Quercus agrifolia*

Replacement Value	Total Annual Benefits
\$15,787,916	\$24,309
Carbon Stored	Annual Carbon Sequestered
2,001.72 tons	41.01 tons/yr.
Average Trunk Diameter	Air Pollution Removal
10.7"	1.58 tons/yr.
Trees Planted	Avoided Runoff
3,640	1,397,660 gallons/yr.



CHINESE PISTACHE *Pistacia chinensis*

Replacement Value	Total Annual Benefits
\$5,352,350	\$8,132
Carbon Stored	Annual Carbon Sequestered
586.75 tons	28.6 tons/yr.
Average Trunk Diameter	Air Pollution Removal
8.7"	0.3 tons/yr.
Trees Planted	Avoided Runoff
2,508	262,606 gallons/yr.

Figure 1. Breakdown of benefits for the top species of trees in Napa.

Enhance aesthetics, beautify the landscape, and increase property values (Theriault et al 2002; Wolf, 2007). The aesthetic value provided by trees is part of Napa's unique charm and appeal that benefits residents and visitors alike.

Reduce wind erosion which thereby protects soil, crops, and biodiversity (Baudry et al 2000; Hodges and Brandle 1996). Trees planted as windbreaks and hedgerows decrease wind speeds, which mitigates the erosion of fertile soil, loss of biodiversity, and greenhouse gas emissions caused by agricultural development while improving high-value crop performance and market pricing for those crops.

Amplify the sense of community by increasing walkability and social cohesion (American Planning Association 2003; Ulmer et al 2016). People who live near outdoor greenery such as trees tend to be more familiar with nearby neighbors, socialize with those neighbors more frequently, and express greater feelings of community and safety than residents lacking nearby green spaces.

Improve physical and mental health outcomes across a wide range of conditions. Greater tree density and diversity has been shown to lower incidence rates of depressive symptoms (Sherer, 2003; Jennings et al 2015); reduce rates of obesity, type 2 diabetes, high blood pressure, and asthma (Ulmer et al 2016); speed up recovery times after surgery (Ulrich, 1984); increase immune function and lower associated disease and mortality risks (Giacinto et al 2021); reduce hospitalizations and deaths due to air pollution (Tiwary et al 2009); and even reduce the incidence of prematurity and low birth weights in infants as much as the mothers who quit smoking during pregnancy (Jones and Goodkind 2019; Currie et al 2009).

Boost economic activity in retail areas. The shade and aesthetic benefits of trees in commercial areas such as downtown have been shown to attract customers more frequently, invite them to linger and shop for longer, and even increase their willingness to pay more for goods (Wolf, 2005).

Reduce noise from traffic, even more effectively than synthetic barriers (Ow and Ghosh 2017).

Increase public safety by discouraging crime and strengthening community bonds (Gilstad-Hayden et al 2015; Kuo 2001; Troy et al 2012). Tree canopy cover has been linked to reduced crime rates, even after adjusting for a number of other variables, such as median household income, level of education, and rented versus owner-occupied housing.

Increase academic performance in students attending schools with more tree cover (Li and Sullivan 2016; Li et al 2019; Matsuoka, 2010). High schools with a higher density of tree cover are positively associated with higher ACT scores, graduation rates, and college preparedness.

Create food sources such as fruits, nuts, and flowers, which in turn provides opportunities for increased food security and food sovereignty for all Napa residents (Bunge et al 2019).

Provide jobs in urban forest management and consulting (Thompson et al 2021).



RED MAPLE
Acer rubrum

Replacement Value	Total Annual Benefits
\$3,654,289	\$7,266
Carbon Stored	Annual Carbon Sequestered
272.61 tons	21.48 tons/yr.
Average Trunk Diameter	Air Pollution Removal
7"	0.33 tons/yr.
Trees Planted	Avoided Runoff
2,034	290,690 gallons/yr.



CALIFORNIA WHITE OAK
Quercus lobata

Replacement Value	Total Annual Benefits
\$7,577,577	\$11,325
Carbon Stored	Annual Carbon Sequestered
764.8 tons	24.16 tons/yr.
Average Trunk Diameter	Air Pollution Removal
11.2"	0.66 tons/yr.
Trees Planted	Avoided Runoff
1,696	581,525 gallons/yr.



TRIDENT MAPLE
Acer buergerianum

Replacement Value	Total Annual Benefits
\$2,079,999	\$5,023
Carbon Stored	Annual Carbon Sequestered
183.64 tons	12.71 tons/yr.
Average Trunk Diameter	Air Pollution Removal
6"	0.26 tons/yr.
Trees Planted	Avoided Runoff
1,602	230,531 gallons/yr.

Figure 1. Breakdown of benefits for the top species of trees in Napa.

PLAN PURPOSE AND VISION

Napa's Plan was developed by staff in the Parks and Urban Forestry Division and Davey Resource Group, Inc., with guidance and input from collaborating City departments, external stakeholders, and community members. The planning process started in January 2023 and concludes in March 2026. This Plan sets a 40-year vision for Napa's urban forestry program and outlines recommendations and actionable steps as a pathway forward.

The Plan's purpose is to guide the City of Napa's management strategy and decision-making to further develop the urban forest programs and associated policies that align with the City's comprehensive planning initiatives. Specifically, the plan analyzes urban forestry data and outlines a set of targeted recommendations as a roadmap for Napa officials, staff, residents, and businesses to use moving forward.

VISION FOR NAPA'S URBAN FOREST

City of Napa Urban Forestry Management Plan Vision Statement

The City of Napa is committed to a long-term vision focused on maintaining and enhancing a healthy urban forest. The Urban Forestry Management Plan creates a framework that recognizes trees as an essential part of the community's infrastructure that supports public health, climate resilience, and provides a wide range of social, environmental, and economic benefits to the Napa community.



Preserve

Trees are an integral part of the community and key to the health and character of neighborhoods, parks, and streets across Napa. Preserving healthy trees and ensuring young trees can grow to reach their full canopy potential will contribute to the overall health of the urban forest. Tree preservation will be supported by encouraging practices aiming to effectively sustain existing trees throughout their life cycle.



Protect

Tree protection programs and education are instrumental in establishing best practices that ensure the existing canopy cover is nurtured, enhanced, and protected for current residents and future generations.



Promote

Each community member can play a role in sustaining a healthy urban forest. Public education and an increased community awareness of the value of trees remain a primary focus. A significant percentage of Napa's tree canopy is on private property. To build further tree or canopy capacity on private property, and position Napa to enhance its tree canopy, increased community engagement, public education initiatives, and programs aimed to incentivize and encourage private planting will be integrated.



Plan

Proactive planning for the maintenance and care of trees is essential to maintaining a healthy urban forest. Through the utilization of tree inventory management software, data related to the urban forest can be properly managed through tracking and planning efforts. To maximize the benefit to the community, prioritized planting efforts in areas with the lowest canopy levels and highest heat exposure will ensure the benefits of trees are shared equitably across the community. Future expansion of tree care initiatives will require the identification and appropriation of dedicated resources.

HOW TO USE THIS PLAN

The development of the Plan is based on the principles of adaptive management, which seek to answer a series of questions about Napa's present and future (Figure 3). Adaptive management is commonly used for resource planning and provides a useful conceptual framework for managing an urban forest resource. The Parks and Recreation Services Department can use these questions and the urban forest management tools presented in this Plan to periodically assess the state of the urban forest and the effectiveness of the urban forestry program. Collaborating City departments and community partners can all use this plan to identify their role in realizing the goals set out for the future Napa urban forest.

ADAPTIVE MANAGEMENT APPROACH

Section 1

What do we have?

Presents the current state of Napa's trees to establish a baseline of where the city is today. It also contains an assessment of the tools, resources, plans, and programs used to manage the urban forest.



Section 2

What do we want?

Summarizes community and stakeholder guidance.



Section 4

How are we doing?

Summarizes ways that Napa can monitor and measure progress in meeting the goals set forth in this Plan.



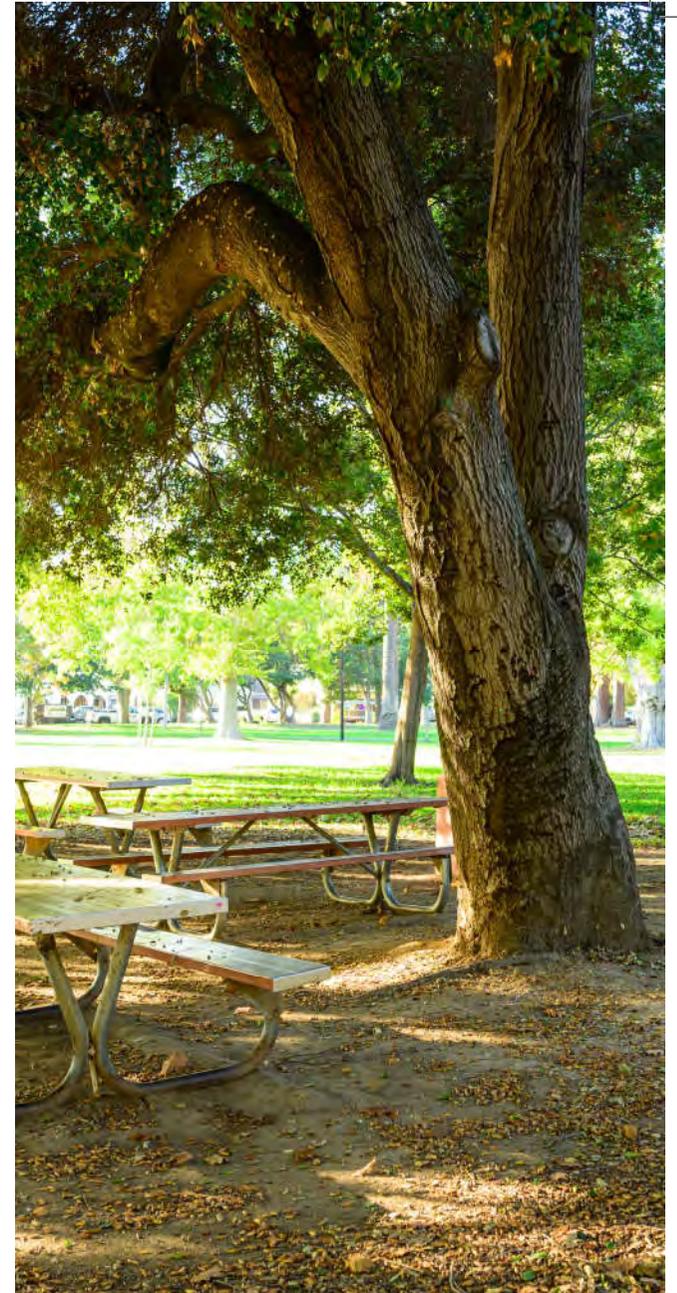
Section 3

How do we get there?

Provides goals, recommendations, and actions for Napa's urban forest managers and partners to use in moving towards the shared vision for the urban forest.



Figure 3. Schematic: (1) what do we have, (2) what do we want, (3) how do we get there and (4) how are we doing.





SECTION 1: WHAT DO WE HAVE?

ABOUT NAPA

Community History

With an estimated 10,000-12,000 years of human habitation, Napa Valley has a rich history and holds significance to a number of different people and cultures (Napa County Historical Society, 2025). Napa, California, nestled in the heart of Napa Valley, was originally inhabited by the Wappo group, which established permanent villages and sustained themselves through hunting and gathering. In the early 1800s, Mexican settlements and culture arrived in Napa Valley. The subsequent discovery of gold in the foothills of the Sierra Nevada the following year brought an influx of miners and entrepreneurs. Napa is an old City by California standards, founded in 1847 as a jumping off point for 49ers bound for the Gold Rush, then incorporated in 1872 (Napa General Plan, 2022). The agricultural industry grew, the railroad arrived, and the town steadily grew throughout the following decades. Urban trees were planted as the land was converted into neighborhoods and parks and helped to create a sense of place. The City has demonstrated commitment to the preservation, maintenance, and growth of its urban forest as a Tree City USA since 2001 and through plans, standards, and initiatives, such as the Tree Ordinance, originally adopted in 1999 and longstanding policies around public tree removals, replacements, planting, and preservation.

Today, Napa is a picturesque destination renowned for its world-class wineries, stunning landscapes, and vibrant cultural scene featuring art galleries, gourmet dining, and outdoor recreational opportunities. Historically, jobs came largely in heavy industrial pursuits; however today's workforce is increasingly based on tourism. Napa enjoys low crime rates, high standards of living, clean air, and nearly perfect weather year-round. As the County seat for one of the world's Great Wine Capitals, the Napa name is synonymous with quality. Napa experiences a Mediterranean climate characterized by warm, dry summers and mild winters, creating ideal conditions for a diverse collection of native and exotic woody plants. The community was originally built in an oak savannah, and finds a balance between urban forestry, agriculture, and the preservation of these crucial woodlands.

TREE SUPPORT NAPA'S SENSE OF PLACE

Napa's Tree Benefits Overview

Quantifiable benefits from the urban forest are based on the environmental functions trees perform. Trees provide air quality benefits, slow down stormwater and remove pollutants. Trees also sequester carbon in woody stems and roots. The economic value of these ecosystem functions is calculated in terms of both volume and cost savings. It is important to note that current assessments account for only a small part of all of the benefits trees provide. The benefits of Napa's trees were calculated in terms of both the urban forest, or total citywide canopy acres, and community tree population, or individual trees in the City's public tree inventory.

Benefits from the Urban Forest

These numbers reflect the benefits provided by all tree canopy within Napa on both public and private property and are based on calculations related to canopy acres.

The urban tree canopy assessment¹ described in Section 1 estimates that Napa's tree canopy annually provides **\$2.7 million** in quantifiable benefits, including:

- Removing **225,780 lb. of air pollutants**, including carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), and particulate matter (PM₁₀, PM_{2.5}), valued at **\$1.4 million**
- Reducing **stormwater runoff** by approximately **52.9 million gallons** annually, valued at **\$475,920**
- Sequestering an additional **4,500 tons of carbon**, valued at **\$766,801**

Annual Benefits from Community Trees

These numbers reflect the benefits provided by the trees in parks and other City-managed public properties (in contrast to the benefits provided by the City's total urban forest as described in the previous section).

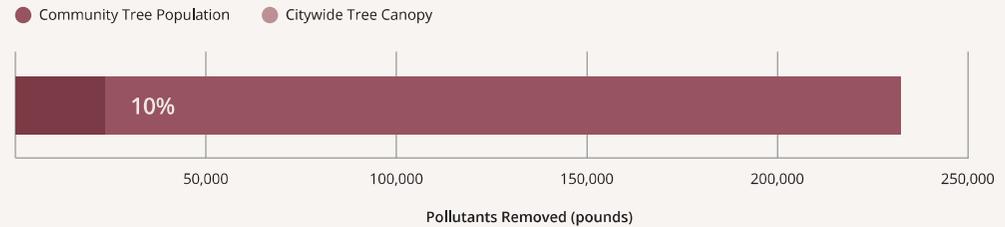
The community tree inventory resource analysis² described in Section 1 estimates that annually, community trees provide quantifiable benefits to Napa totaling **\$184,176**. The **average annual per tree benefit is \$5.40**. These benefits include:

- **11.0 tons of air pollution removed**, improving air quality, and reducing adverse health incidents for a value of **\$100,707**, an average of **\$2.95 per tree**.
- **378.3 tons of carbon directly sequestered**, valued at **\$64,521**, an average of **\$1.89 per tree**.
- **2.1 million gallons of avoided stormwater runoff**, valued at **\$18,948**, an average of **\$0.56 per tree**.

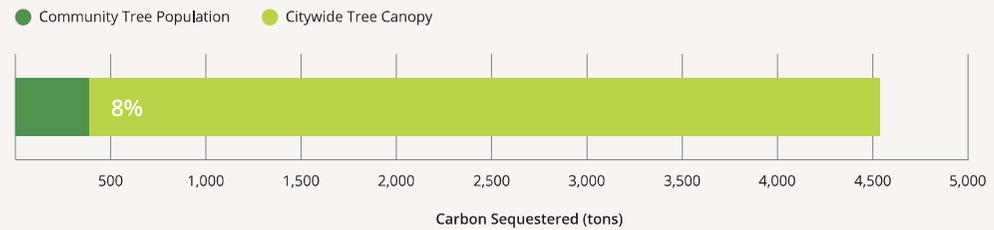
¹ i-Tree Canopy (v7.1) was used to estimate and quantify the ecosystem benefits from Napa's urban tree canopy to air quality, stormwater runoff, and carbon sequestration. The dollar value of these benefits was calculated based on cost-modeling valuations from i-Tree Eco (v6.1.36).
² i-Tree Eco (v6.1.49) was used to estimate the benefits of Napa's community trees.

PROPORTION OF BENEFITS PROVIDED BY COMMUNITY TREES

Air Quality Improvement



Carbon Sequestration



Stormwater Runoff Reduction

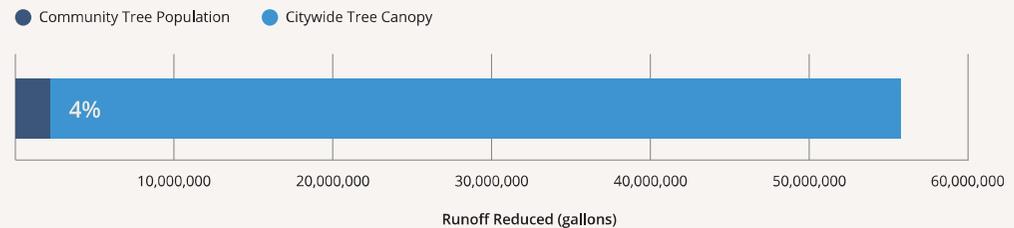


Figure 4. Napa's community tree population is providing approximately 10% of citywide air quality benefits, 8% of carbon sequestration benefits, and 4% of stormwater benefits, based on calculations from i-Tree Eco (v 6.1.36) and i-Tree Canopy (v 7.1).

NAPA'S TREES

Tree Canopy Assessment Summary

In 2023, Napa completed a baseline urban tree canopy assessment based on 2022 high-resolution aerial imagery, the most recent available at the time. Tree canopy covers approximately 2,528 acres (21.5%) of Napa's total 11,760 acres (18.4 square miles).

The report also examined data related to:

Land Cover

Land area that is covered (or not) by trees and vegetation, as viewed from above. In addition to tree canopy, Napa's land cover includes **39.5% impervious surfaces** such as roads, buildings, and parking lots; **28.6% grass and other low-lying, non-woody vegetation**; 8.3% bare soil; and <1% open water.

Change In Tree Canopy Cover From 2012-2022

This analysis used a point sampling method to determine how tree canopy cover has changed within social and political boundaries over time. **Overall, Napa's tree canopy increased by 19.0% between 2012 to 2022, from 18.1% in 2012 to 21.5% in 2022.**

Napa's Urban Tree Canopy

Total City Area: 11,760 acres (18.4 square miles)
 Urban Tree Canopy (2022): 2,528 acres (21.5%)
 Urban Tree Canopy (2012): 2,124 acres (18.1%)
 Canopy Change (2012-2022): 403.9 acres (+19.0%)

In Napa, more than **76.0% of the canopy consists of trees in fair or better condition.**

What is an Urban Tree Canopy Assessment?

An urban tree canopy assessment uses aerial imagery to measure the total amount and distribution of tree canopy on both public and private property within a community as viewed from above. This information can be used to better understand the city's urban tree canopy—where it is located, how it is changing over time, the benefits it provides to residents, where canopy should be preserved, and where potential future tree planting opportunities exist. Napa is encouraged to reference these results, utilize the data for additional analyses, and continue to seek new tools and information to measure progress, report accomplishments, and inform management decisions.

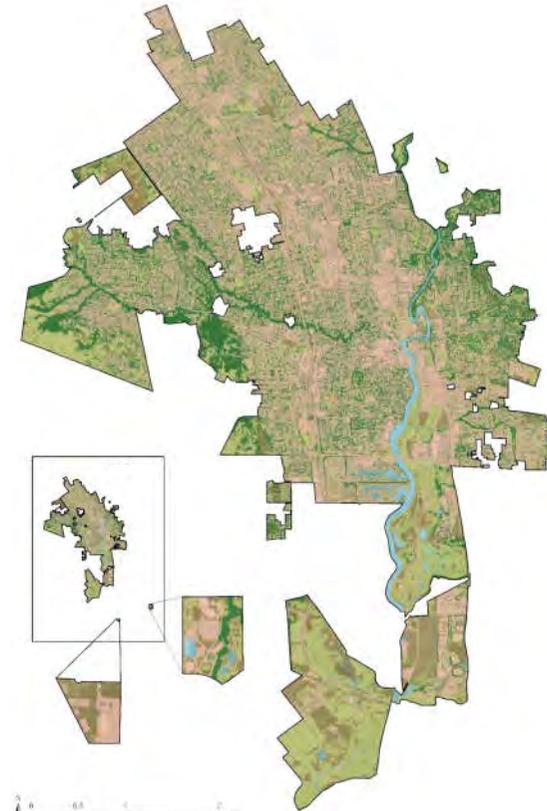
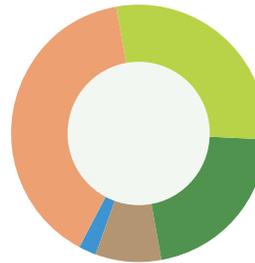
39.5%
Impervious Surfaces
 4,649.8 acres

8.3%
Bare Soil
 975.4 acres

28.6%
Grass/Low-lying Vegetation
 3,364.4 acres

<1%
Open Water
 242.0 acres

21.5%
Tree Canopy
 2,528.4 acres



0 5 10 Miles

○ Napa City Limits

Land Cover Classification

- Tree Canopy
- Impervious Surfaces
- Grass/Low-Lying Vegetation
- Bare Soil
- Open Water

Map 1. Land cover classification in Napa based on 2022 aerial imagery. Tree canopy is concentrated along the Western and Eastern borders of town at the Wildland Urban Interface, and along the Napa River.

Tree Canopy Cover And Change Within Geographic Boundaries

Land area that is shaded by trees, summarized by social and political boundaries including:

Public/Private Land

Public land is needed for key infrastructure and private land can help augment tree canopy in public areas with limited space for tree planting. Additionally, in some areas, space may be so limited in the public rights-of-way that the only opportunity for tree planting will be on private land.

- A total of 76.4% of land in Napa is privately owned (8,100 acres), highlighting the importance of trees on private property to the overall urban forest.
- **The average canopy cover is greater on privately owned land (23.9%) compared to publicly owned land (16.3%).**
- From 2012-2022, private property added 309.9 acres of tree canopy, or 76.7% of the citywide 403.9-acre increase.

U.S. Census Block Groups

Block group data can be used to investigate trends in social and economic factors.

- Napa has 69 block groups ranging from 4.7% cover to 94.0% canopy cover.
- Canopy cover across block groups was compared with demographic variables including population, income, median home value, race, age, education, and poverty, and **linear correlations with minority populations and tree canopy cover were identified** (Figure 5).
- From 2012-2022, canopy change in Napa's block groups ranged from a loss of -12.6 acres to a gain of 29.3 acres.

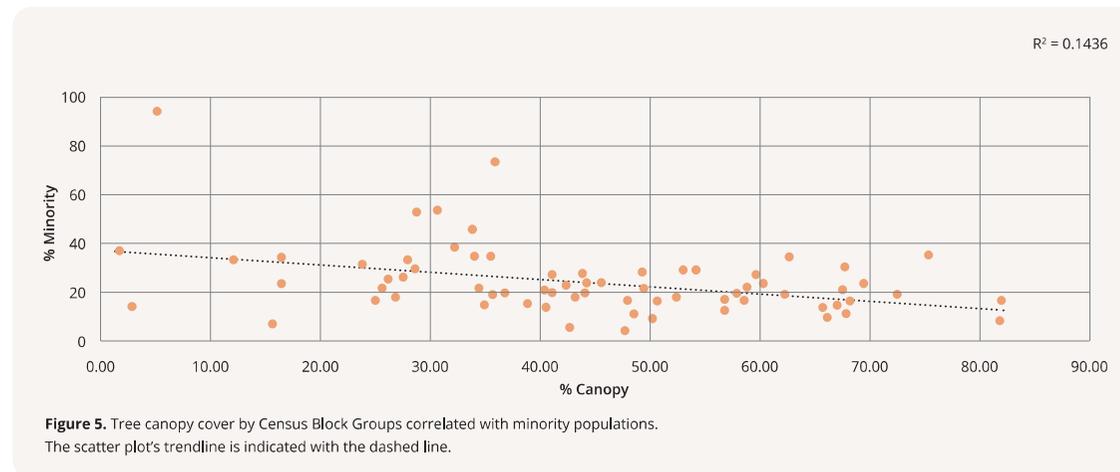
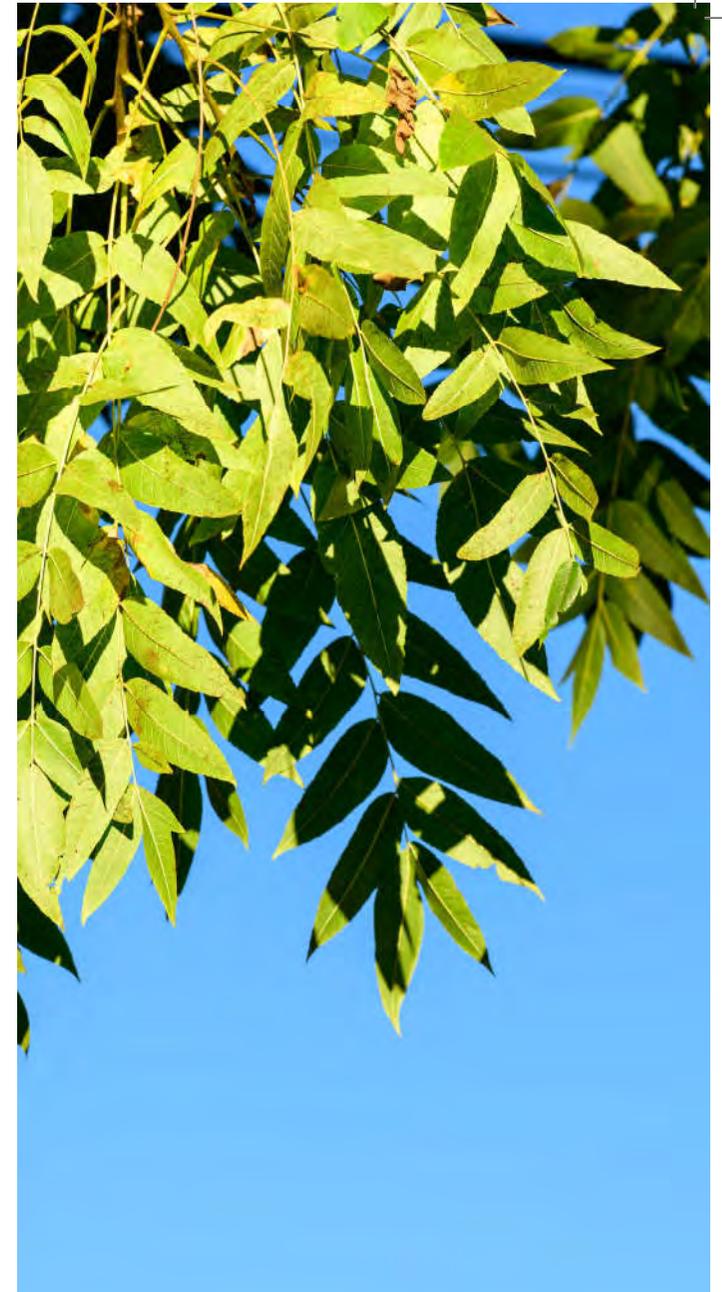
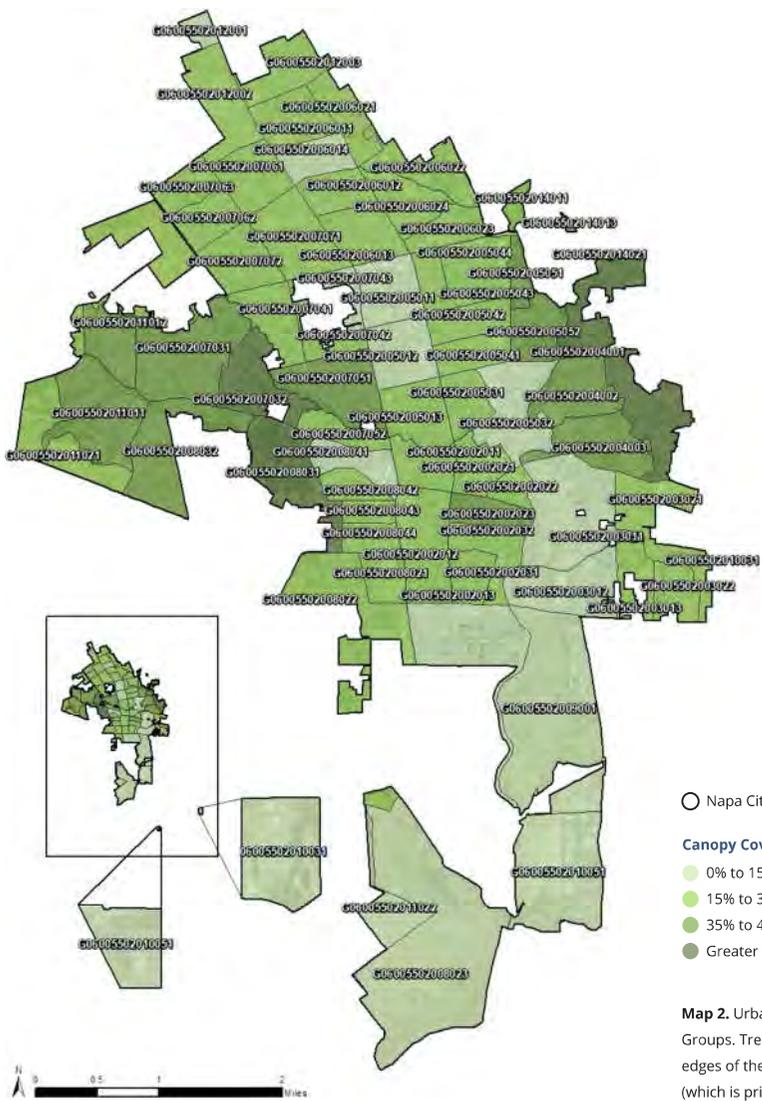
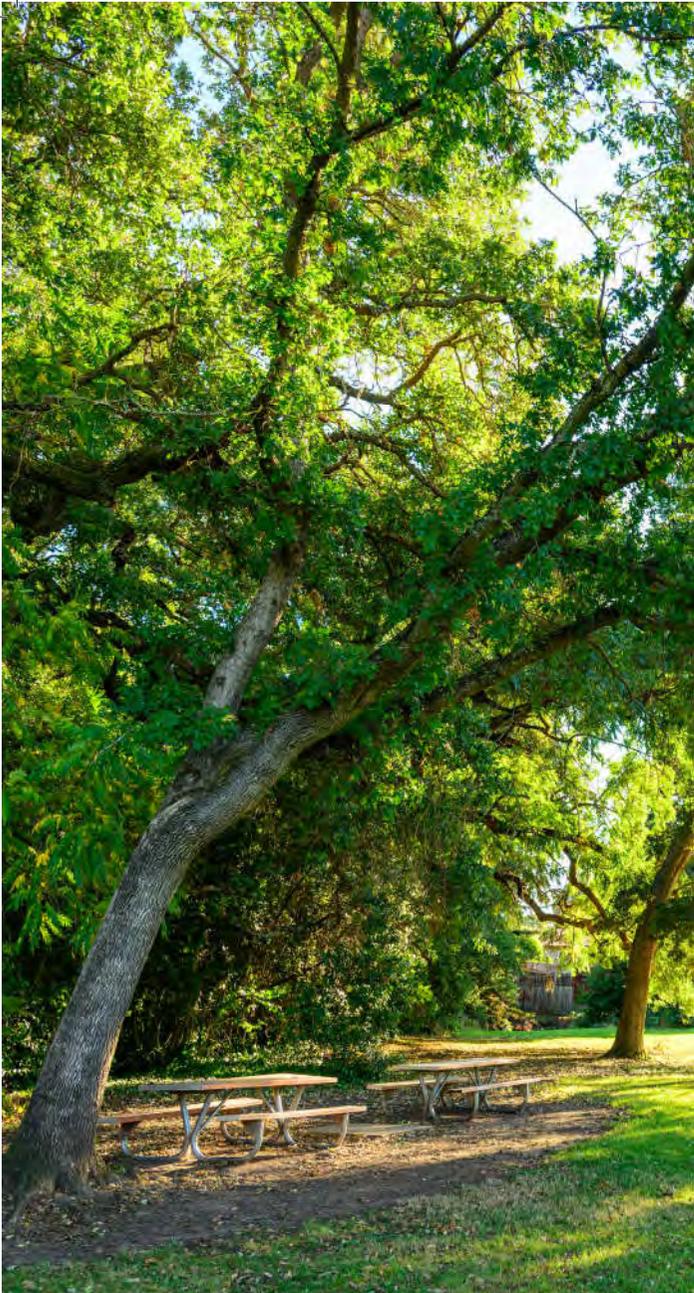


Figure 5. Tree canopy cover by Census Block Groups correlated with minority populations. The scatter plot's trendline is indicated with the dashed line.



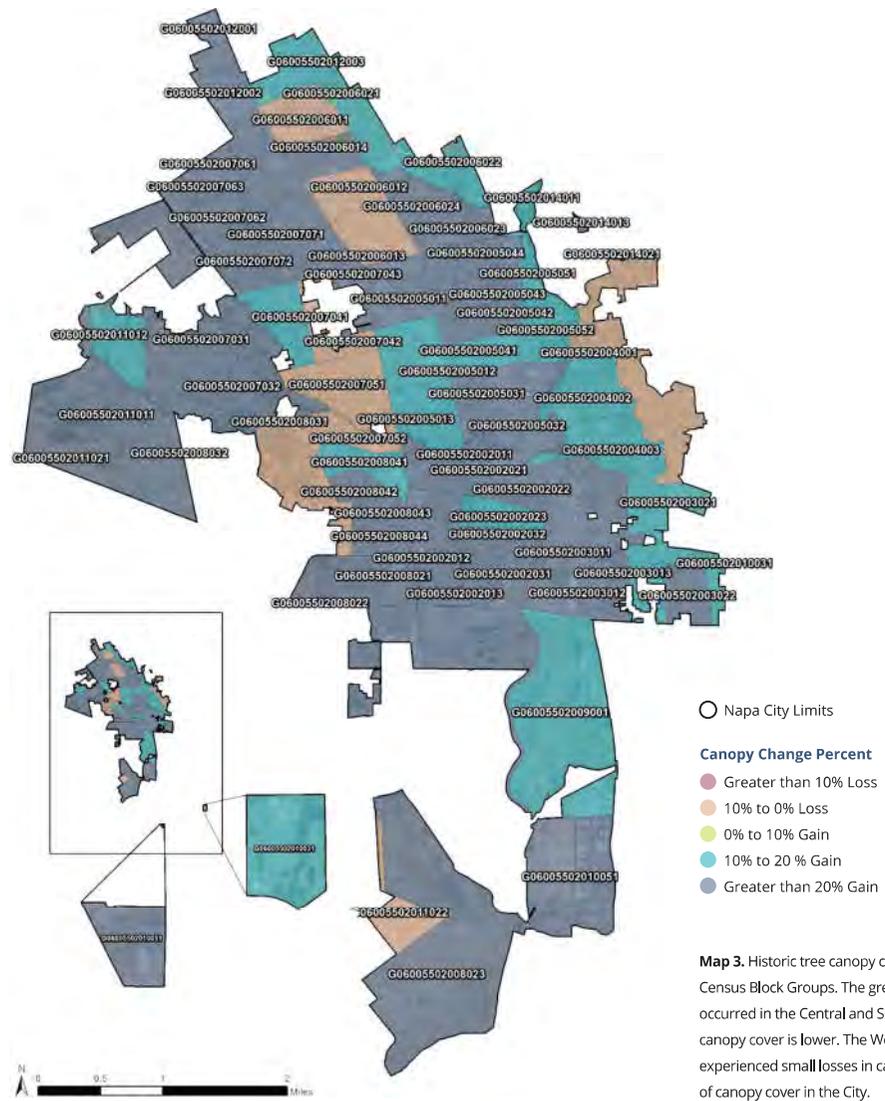


○ Napa City Limits

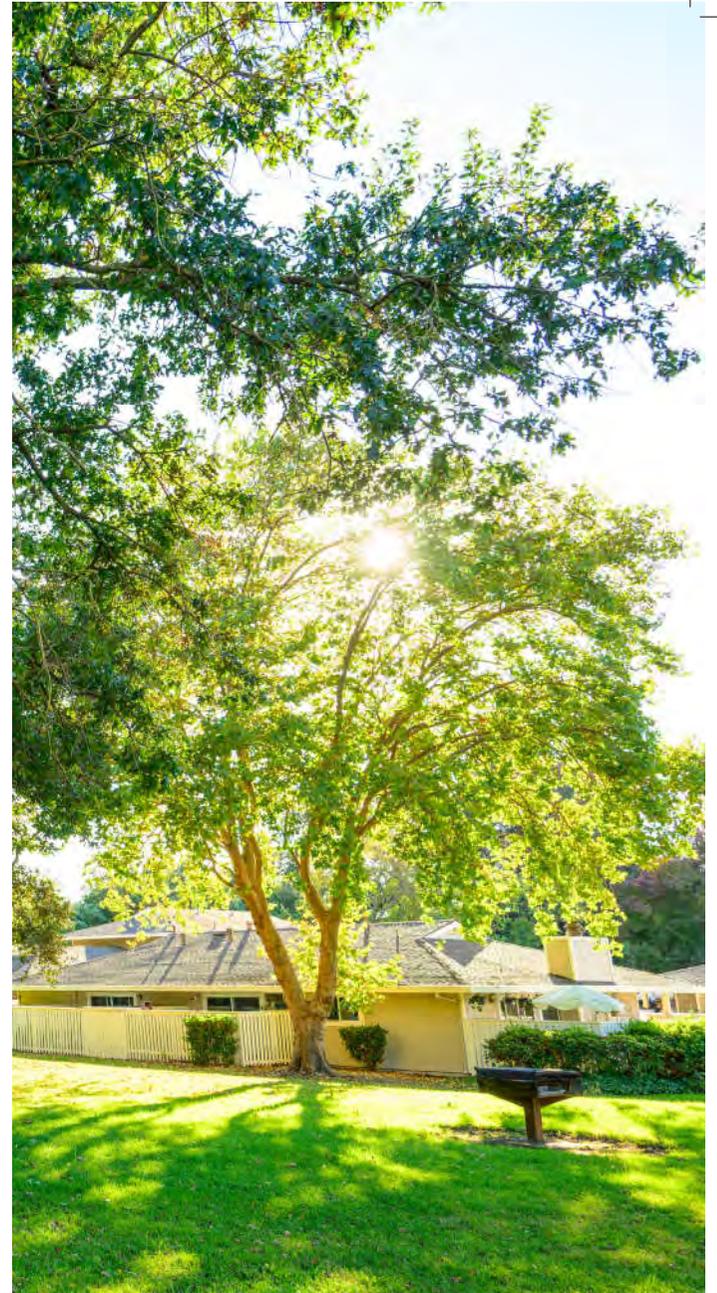
Canopy Coverage Percent

- 0% to 15%
- 15% to 35%
- 35% to 45%
- Greater than 45%

Map 2. Urban tree canopy cover in Napa by US Census Block Groups. Tree canopy is greatest along the Western and Eastern edges of the City and lowest in the Southern portion of the City (which is primarily agriculture).



Map 3. Historic tree canopy change (2012-2022) in Napa by US Census Block Groups. The greatest increases in canopy have occurred in the Central and Southern portions of town, where tree canopy cover is lower. The Western and Eastern border areas have experienced small losses in canopy but still have the highest levels of canopy cover in the City.



Historic Districts

Napa contains nine Historic Districts, which encompass a total of 548.4 acres and range from 18.1% to 33.8% canopy cover.

- **Historic Districts contain a total of 157.4 acres of tree canopy or an average of 28.7% canopy cover**, which exceeds the citywide average of 21.5%.

Zoning

Zoning reflects the community's plan for growth in specific areas. Zoned areas encompass 9,714 acres of Napa.

- **Residential areas have the highest canopy cover and contain the majority of Napa's urban tree canopy.**

Parks

Napa has 54 parks as well as facilities and civic spaces that have an average canopy cover of 25.3%. Many of Napa's parks have space to accommodate additional tree planting. In recent years, there has been a focus on Napa County Resource Conservation District's acorns to oaks program at Alson Park. However, Napa's parks vary in size, form, and use, and the availability of space to plant trees is limited by the different land uses in parks. For example, Oxbow Commons Flood Bypass, an Army Corps of Engineers project, currently has 3% canopy cover, but current management goals for this park to prioritize stormwater management and flooding do not allow for additional canopy cover.

Water Drainages and River Buffer

Napa has 5 named watershed areas and 26 water drainage areas that cover 11,760 acres (the full city boundary). Canopy cover in Napa's drainage areas ranges from 1.6% to 28.8%.

- Along with drainages, this assessment analyzed land cover within a 50-foot buffer along rivers and streams. **The river buffer covered 501.2 acres and had an average canopy cover of 30.5%**, greater than the citywide average of 21.5%.

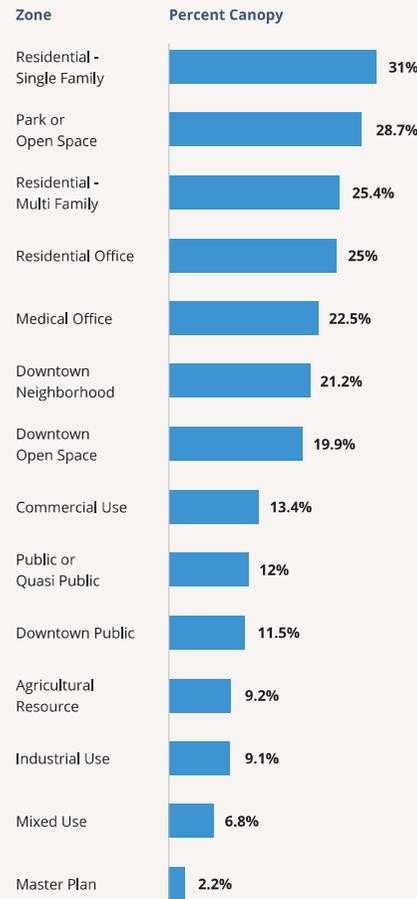


Figure 6. Tree canopy cover in Napa by zoning type.

Napa River Watershed

The Napa River watershed provides habitat to many aquatic species, including some endangered species of fish. Tree canopy along drainages reduces the flow and volume of stormwater, which prevents erosion and the movement of pollutants into water bodies, both of which can threaten aquatic life. Expanding canopy cover in these watershed areas can also promote canopy connectivity/ wildlife corridors, erosion control, stormwater and flood mitigation, and increase the amount of ecosystem benefits the community receives.

Tree Canopy Connectivity

The overall health of Napa's urban ecosystem depends highly on the ability of the trees, plants, wildlife, insects, and humans to interact collectively as a whole. Unfortunately, urban growth and sprawl often reduce tree canopy and disrupt canopy connectivity, which degrades ecosystem health and habitat quality. This decline results in disturbance of existing ecosystems and increases the risk and susceptibility to invasive species. On the other hand, the health and diversity of the overall canopy will often vastly improve by creating linkages between multiple patches of canopy.

Napa's existing canopy cover was analyzed to discover patterns in the distribution of canopy. The analysis found that Napa's urban forest includes the following:

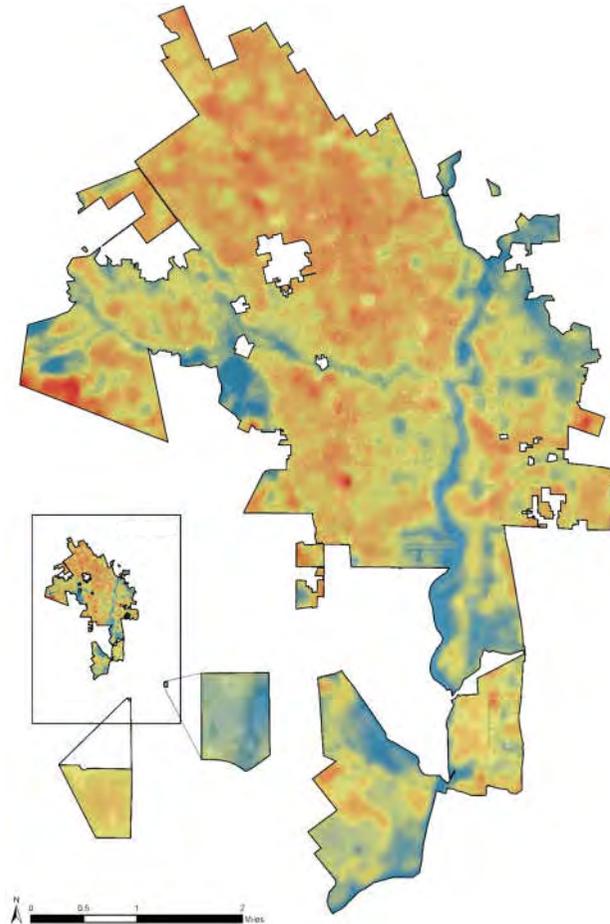
- **36.2 acres of Core Canopy (1.43%):** Tree canopy that exists within and relatively far from the riparian forest or savannah/non-forest or savannah boundary (i.e., forested areas surrounded by more forested areas).
- **129.9 acres of Perforated Canopy (5.1%):** Tree canopy that defines the boundary between core forests and relatively small clearings (perforations) within the forest landscape.
- **2,006 acres of Patch Canopy (79.4%):** Tree canopy of a small-forested area that is surrounded by non-forested land cover.
- **355.9 acres of Edge Canopy (14.1%):** Tree canopy that defines the boundary between core forests and large core forests and large non-forested land cover features. When large enough, edge canopy may appear to be unassociated with core forests.

Climate Vulnerability and Heat Island

Capturing land surface temperature is essential to monitoring heat islands, air quality, and overall well-being for residents in Napa. To establish an understanding of how urban forest canopy affects heat islands, a land surface temperature analysis was conducted using Landsat 8 imagery taken during the late afternoon during summer conditions. Most of the land within Napa city limits has moderate land surface temperatures, with a mean of 78.3° F.

Unshaded sidewalks, streets, and parking lots are among the greatest contributors to the creation of urban heat islands. Trees and their canopy distribution can greatly affect the surface temperatures of an area. Trees, especially large mature trees, can provide relief to these areas and should be considered where possible. There is a 24° F difference when comparing areas with high canopy cover to areas with very low canopy cover. **The lowest recorded temperature was in a heavily forested area at 64.3 degrees, while the highest temperature recorded was 88.8 degrees located in northwestern Napa.**

When considering heat islands, the northern parts of Napa would benefit the most from increased canopy cover.



Map 4. Napa's land surface temperatures are generally moderate with a mean of 78.3° F, but there is a 24° F difference between areas with high canopy cover (64.3 degrees) and areas with very low canopy cover (88.8 degrees). The Northern and Western parts of Napa would benefit the most from new tree plantings to help mitigate the urban heat island effect.

○ Napa City Limits

Average Land Surface Temperature

High: 88.83° F

Low: 64.26° F

Climate Resilience Planning

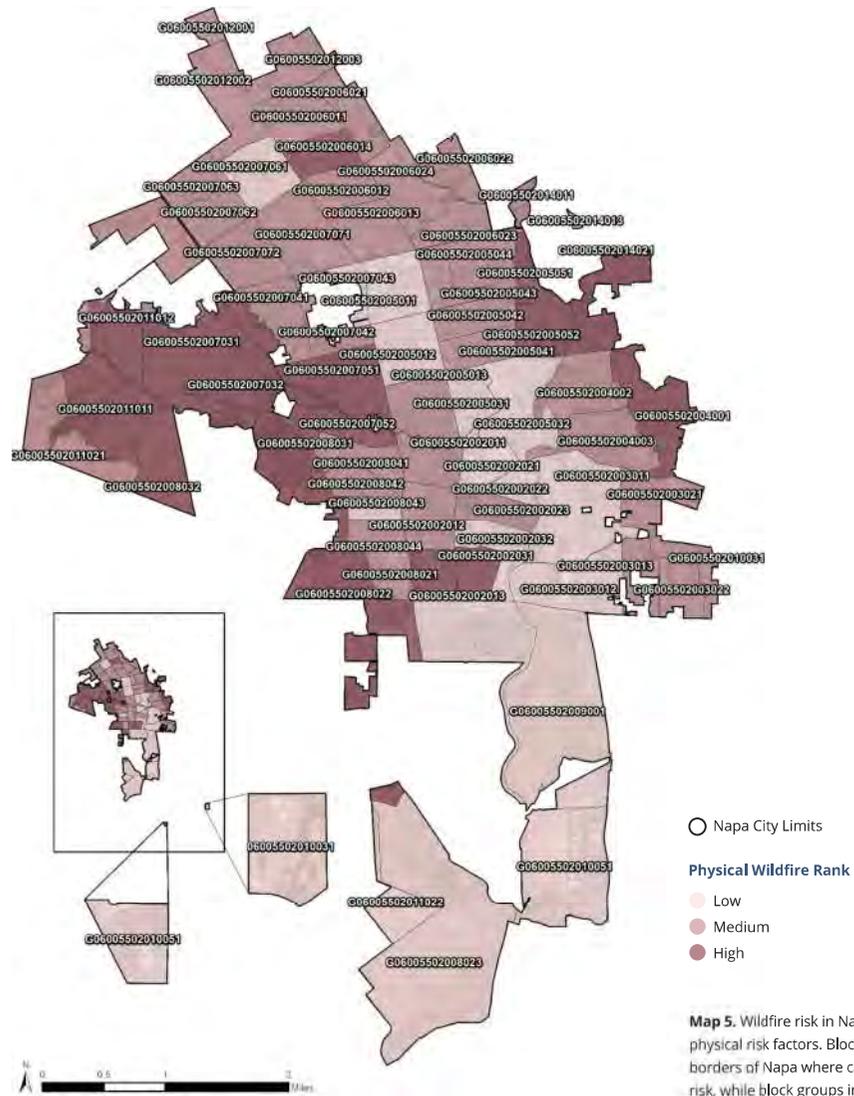
The City of Napa is implementing a range of legislative and policy measures to combat climate change through the Napa Sustainability Plan (2012), aligning its actions with Napa County's initiative to create a Regional Climate Action and Adaptation Plan. Key initiatives include:

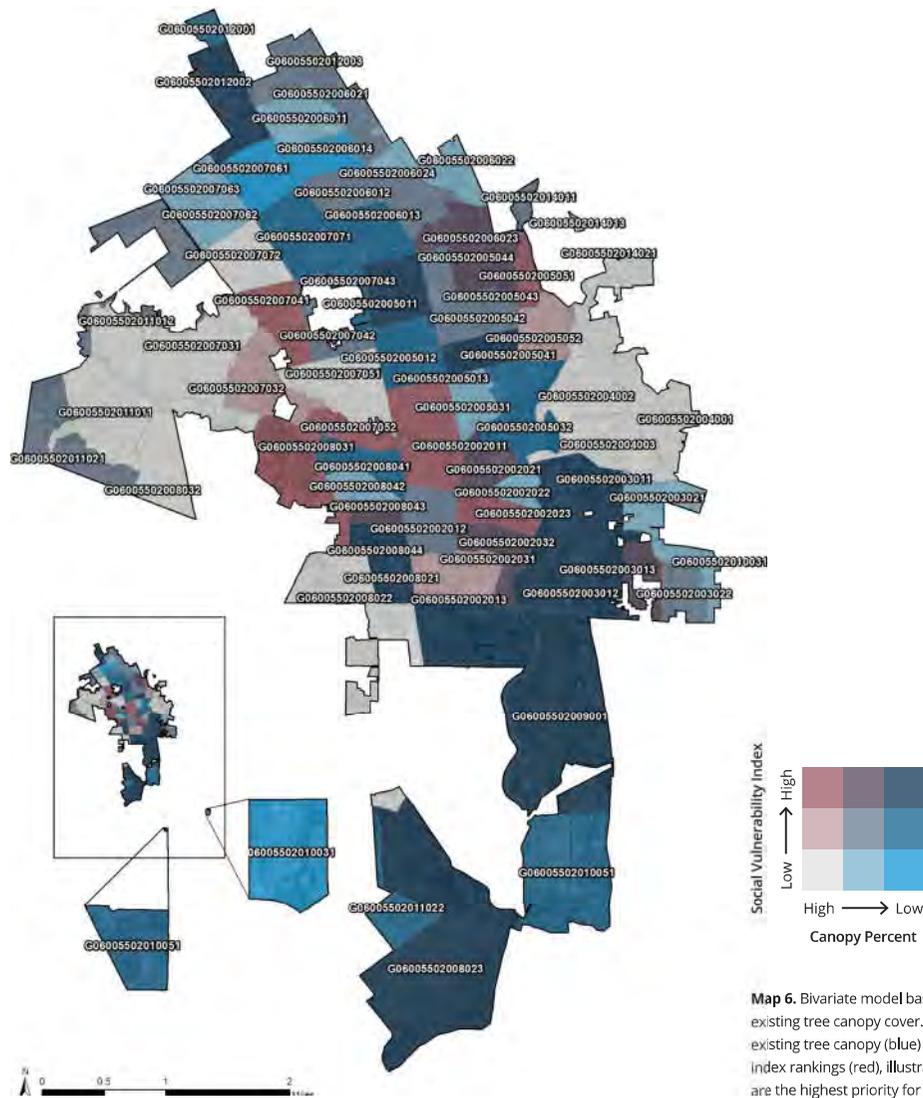
- Renewable energy sources, through solar panel installations and enhancing energy efficiency in buildings.
- Sustainable transportation, with efforts to expand public transit, increase the use of electric buses, and develop bike lanes and pedestrian pathways.
- Waste reduction, through zero waste initiatives and plastic reduction ordinances, alongside water conservation measures such as incentivizing water-efficient fixtures and improving stormwater management.

Wildfire Risk

Wildfires are an annual occurrence in many parts of the United States, causing major damage and affecting both the physical and social landscapes of the communities that are impacted. Napa's wildfire risk study considered social and physical factors to identify areas that may be at greater risk of being impacted by wildfires. Physical factors, including higher temperatures, slope, distance to vegetation, building proximity to other structures and to wildlands, tree health, and canopy density were selected to identify areas where there is a greater likelihood of higher impacts from wildfires.

Based on analysis of physical factors, **block groups on the east and west borders of Napa are most at risk**, since canopy cover on the east and west edges is much greater than in the more developed city center. Factors like vegetation, canopy, and proximity to the wildland urban interface put these areas at greater risk of wildfire damage. Block groups in South Napa have a lower risk. Additional analysis of wildfire risk is evaluated in the City's 2025 Community Wildfire Protection Plan (CWPP).





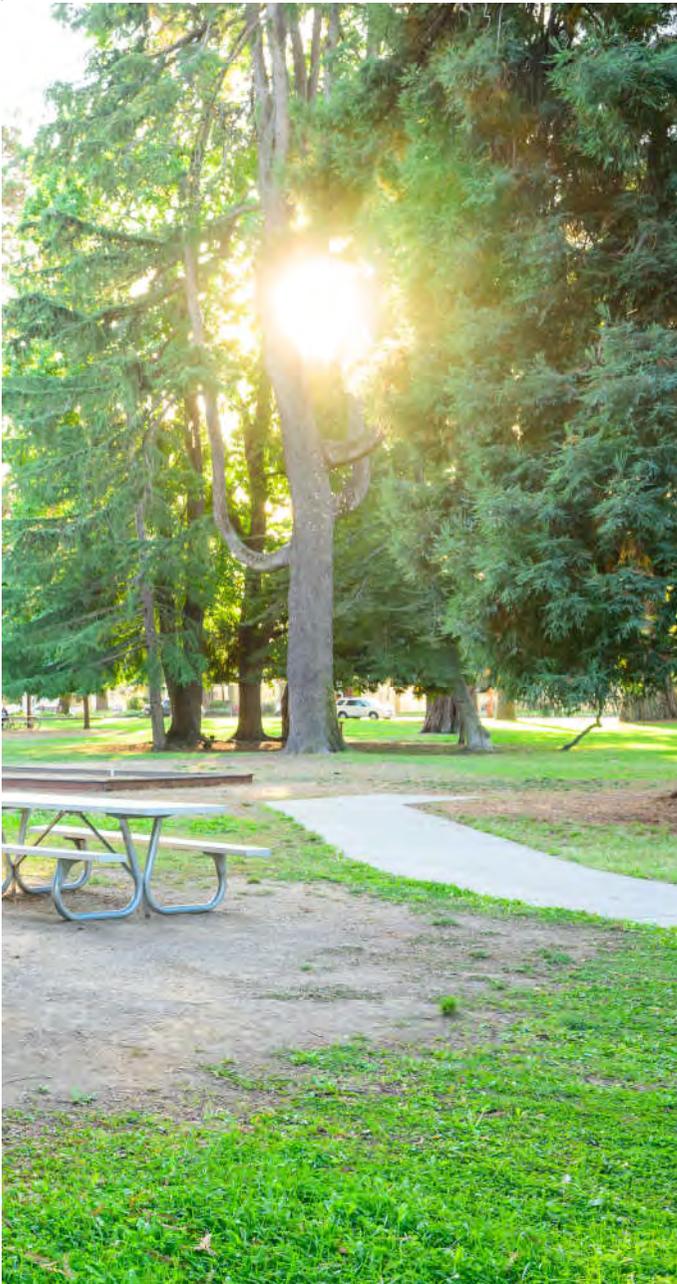
Map 6. Bivariate model based on social vulnerability and existing tree canopy cover. Census block groups with low existing tree canopy (blue) and high social vulnerability index rankings (red), illustrated on the map in deep purple, are the highest priority for new tree plantings.

Tree Canopy and Equity

To identify and prioritize planting potential for social equity, census data including median income, ages 65 and over, ages under 18, racial minority percent, poverty percent, population density, renter percent, and single-family home percent were analyzed and classified into five rankings from low to high. Higher priorities for social equity focus efforts on providing trees and tree canopy to all citizens who are particularly vulnerable to environmental factors that can be affected by tree canopy. These priority sites are deemed to have the greatest return due to their importance in providing residents of the community with increased access to nature. Areas with very high priority for planting are areas where both the tree canopy cover is low, and the composite of social equity census data are also low.

Another resource that was used to assess equity was American Forests' Tree Equity Score (2025). This industry-standard, map-based tool pairs tree canopy data with socioeconomic Census Block Group data and utilizes information about a city's tree canopy, building density, and land surface temperature, as well as their population's income and employment, human health, languages spoken, race and age demographics, to calculate a score from 1-100 and automatically generate recommendations to help the community achieve a more equitable distribution of tree canopy by bringing more block groups up to a higher score through strategic tree planting.

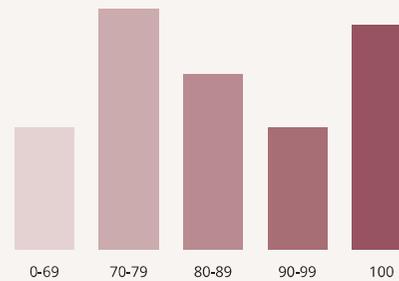
Napa has a composite Tree Equity Score of 80, and its block groups' individual scores range from 44 in 201200-1, Napa's northernmost block group, to 100 in several areas. Currently, 49 of 64 block groups in Napa (76.6%) have a Tree Equity Score below 100. In order to bring every block group and therefore the citywide composite score to a score of 100, Napa would need to plant 1.1 square miles (~704 acres) of canopy or approximately 50,676 trees in strategic locations.



TREE EQUITY SCORE LOCATION INSIGHTS

Distribution of Scores

Composite score: 80



Summary

82,844 Urban area population	22% Children (0-17)
27% Tree canopy cover	18% Seniors (65+)
22% People in poverty	6% Linguistic isolation
46% People of color	30% Average health burden index
5% Unemployment	77% Neighborhoods below 100

Figure 7. Tree Equity Score Location Insights for Napa, CA.
Source: American Forests.

TREE INVENTORY AND RESOURCE ANALYSIS SUMMARY

Community trees are publicly managed trees along streets, parks, and at City facilities and were inventoried to better understand the resource and management needs. **Additional trees that were not inventoried but that are part of the City's urban forestry network are located in the City's natural area and open space parks.** All of these trees play an important role in Napa, providing numerous tangible and intangible benefits to residents, visitors, neighboring communities, and the surrounding Napa Valley. People in the community value this resource and recognize them as integral to the livability and comfortability of the community.

Resource Structure

The following information characterizes Napa's overall community tree resource:

- Napa's community tree inventory includes **34,136 trees, 2,676 vacant sites, and 382 stumps**, which means that **91.7%** of community tree planting sites are full, and Napa has an opportunity to fill **3,058 additional vacant planting sites.**
- The top three most prevalent species are: ***Lagerstroemia spp.* (Crape myrtle species, 18.5%), *Quercus agrifolia* (coast live oak, 10.7%), and *Pistacia chinensis* (Chinese pistache, 7.4%).**
- 52.3% of trees are less than 8 inches in diameter (DBH) and 6.3% of trees are larger than 24 inches in diameter, indicating an established age distribution.
- Community trees provide approximately **1,536 acres of canopy cover** which accounts for 13.2% of Napa's total land area.
- Replacement of all 34,136 community trees with trees of equivalent size, species, and condition, would cost over **\$116 million.**
- Community trees have **stored more than 13,209 tons of carbon (CO₂)** in woody and foliar biomass to date.

Species Diversity

Maintaining diversity in a community tree resource is important. Dominance of any single species or genus can have detrimental consequences in the event of storms, drought, disease, pests, or other stressors that can severely affect a community tree resource and the flow of benefits and costs over time. In light of significant pests and diseases, many cities are opting to increase tree species diversity to improve resilience.

Napa's community tree resource contains **260 unique species** with:

- **24% native to California and 41% native to North America.**
- **Four species considered invasive** according to California Invasive Species Advisory Committee, including *Ailanthus altissima* (tree of heaven), *Eucalyptus globulus* (blue gum eucalyptus), *Triadica sebifera* (Chinese tallow) and *Schinus molle* (California peppertree).
- **24,370 (71.4%) susceptible to pests and pathogens** and the potential risk is estimated at \$93.2 million.
- The three most predominant species represent 36.5% of the population: ***Lagerstroemia spp.* (Crape myrtle species, 18.5%), *Quercus agrifolia* (coast live oak, 10.7%), and *Pistacia chinensis* (Chinese pistache, 7.4%).**

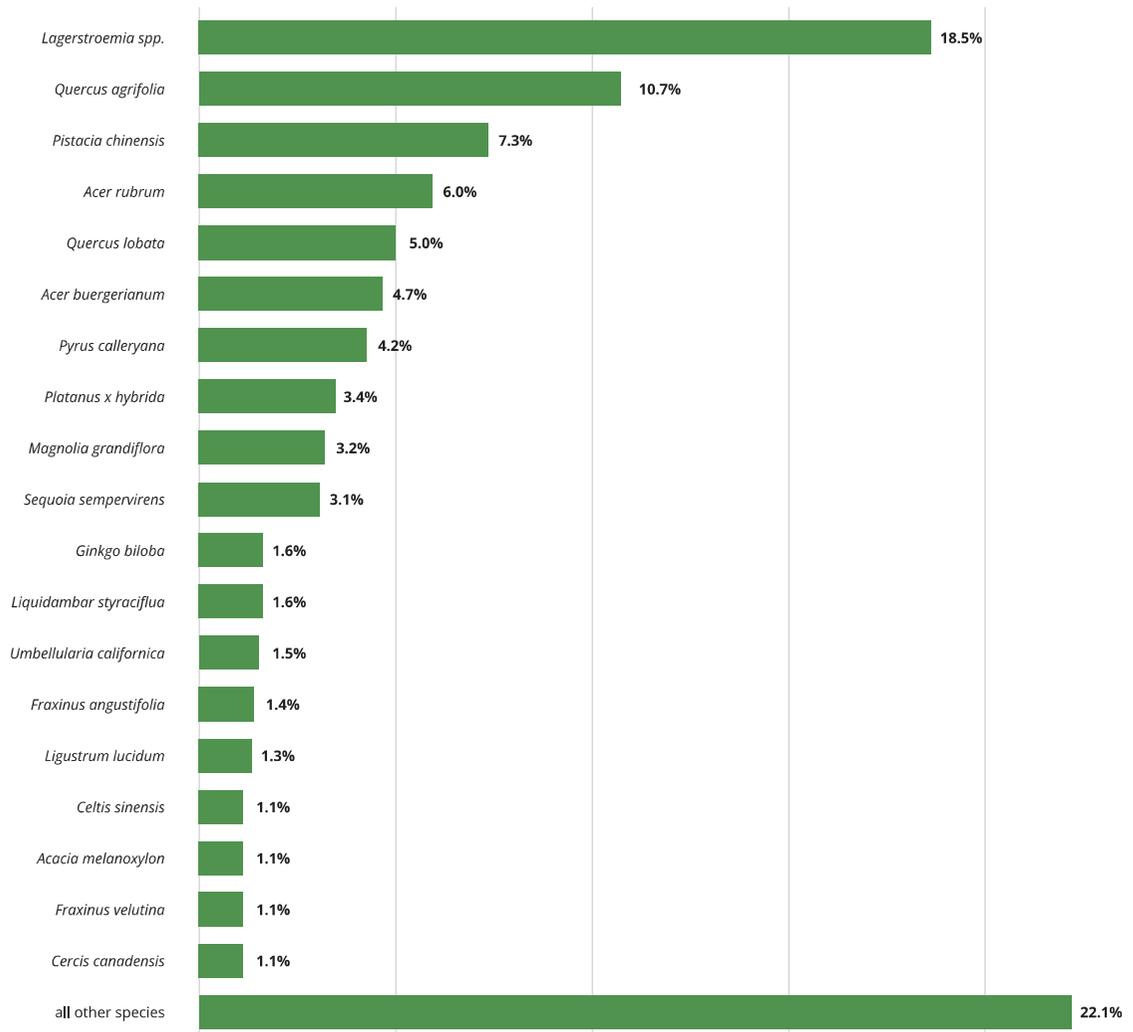
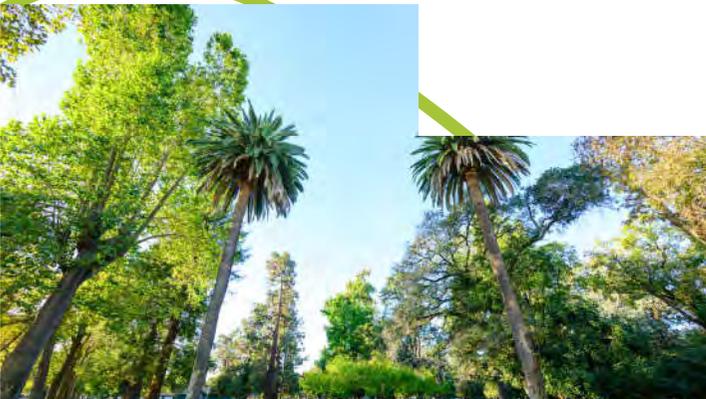


Figure 8. Most prevalent species in Napa's community tree inventory (>1% of Population).

The widely used 10-20-30 rule of thumb states that an urban tree population should consist of no more than 10% of any one species, 20% of any one genus, and 30% of any one family (Clark et al 1997). Using the 10-20-30 rule as a minimum goal, Napa's community tree resource has an overabundance of *Quercus agrifolia* (coast live oak) on a species level and *Lagerstromia spp.* (Crape myrtle species) on a genera level.

Relative Age Distribution

The relative age of a tree can be approximated from the trunk diameter (DBH). Individual tree DBHs were compiled to understand the distribution of the entire tree resource (Figure 9). A desirable distribution has a high proportion of young trees to offset establishment and age-related mortality as the percentage of older trees declines over time (Richards, 1982/83; Morgenroth et al 2020). This ideal, albeit uneven, distribution suggests a large fraction of trees (~40%) should be young, with a DBH less than eight inches, while only 10% should be in the large diameter classes (>24 inches DBH). Planting enough trees to plan for the succession of trees that are mature and reaching the end of their lifetime is important for maintaining canopy continuity.

Napa's community tree resource age distribution has:

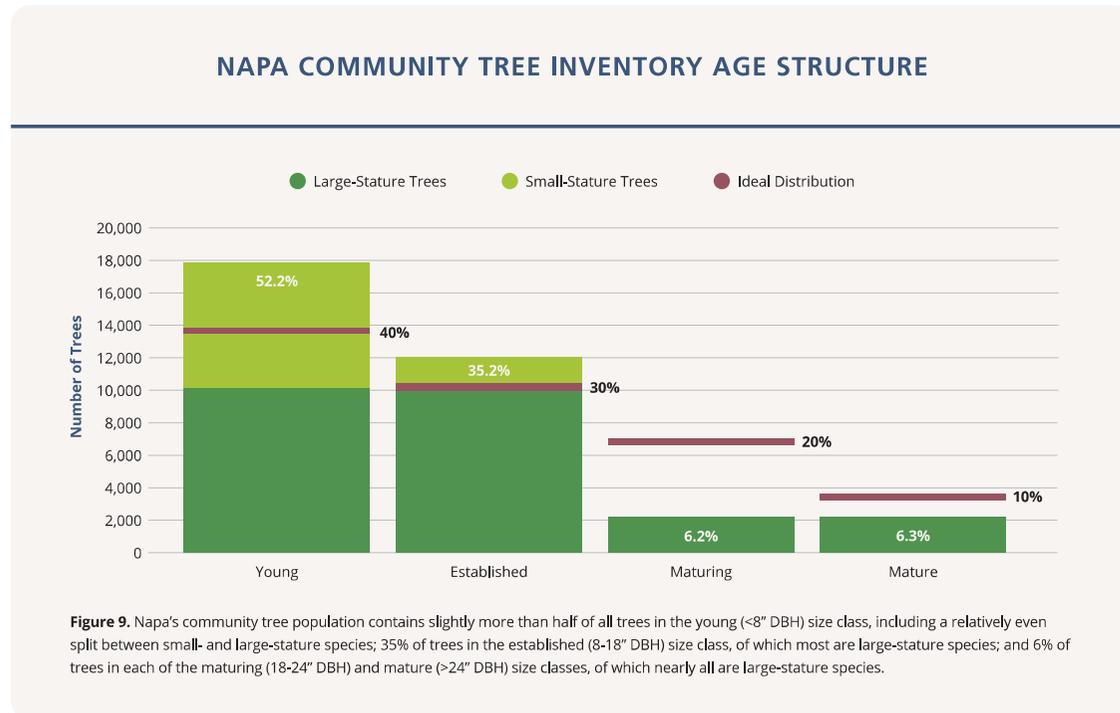
- Trees in the **young** age class (8 inches or less in diameter) which represent **52.3%** of the overall inventory.
- Within this size class, trees less than four inches in diameter represent **21.8%** of the overall population, indicating a recent increase in new tree planting.
- Of the 52.3% of trees under 8" in diameter, **29.6%** are **large-stature** species that will likely grow into the largest size class eventually, and **22.6%** are **small-stature** species such as *Lagerstroemia spp.*, Napa's most prevalent species, that may remain in one of the smaller size classes even at maturity.
- Trees in the **established** age class (between 8 and 18 inches in diameter) represent more than **35%** of the overall inventory. This age group is a positive indicator of future benefits since

large shade trees typically provide more shade, pollutant uptake, carbon sequestration, and rainfall interception than small trees.

- Of the 35% of trees between 8 and 18 inches in diameter, **29.1%** are **large-stature** species and **6.1%** are **small-stature** species.
- Trees in the **maturing** and **mature** diameter classes (between 18 and 24 inches and >24 inches, respectively) collectively represent **6.3%** of the overall inventory. In general, these trees will require more regular inspections and routine maintenance as they mature.

- **Less than 1%** of trees in the 18-24 inch and >24 inch diameter classes are **small-stature** species.

Analysis of the age distribution of Napa's most prevalent species, described in detail in the resource analysis, can help resource managers to understand and foresee maintenance activities and future budgetary needs. In addition to informing managers of the economics of prevalent species, managers can use the age distribution to determine trends in plantings and adopt strategies for species selection in the years to come.



MAINTENANCE NEEDS

During the inventory process, maintenance needs were recorded for all inventoried community trees. The majority of trees were assigned pruning.

Recommended Maintenance	Number of Trees
Small Tree Routine Prune	13,939
Large Tree Routine Prune	13,349
Training Prune	3,973
Priority Pruning	2,156
Removal	719
Total	34,136

Table 1. Summary of recommended maintenance for community trees.

Tree roots grow under sidewalks and other concrete infrastructure (such as curbs and gutters) to find moisture. When this occurs, it can result in cracked or lifted pavement. The majority of community tree sites are not adjacent to damaged hardscape, the most common type of hardscape with damage is sidewalks (10.3%).

Hardscape Damage	Number of Sites	Percent of Sites
None	30,665	82.42
Sidewalk	3,830	10.30
Curb and Gutter	817	2.20
Both	1,892	5.09
Total	37,194	100%

Table 2. Summary of damaged hardscape adjacent to community tree planter sites.

Sidewalks and Other Hardscapes in Napa

Pavement maintenance is one of the most costly activities to perform. The United States spent \$27.5 billion in 2019 on pavement repairs, up 13.8% from the previous year (Reason Foundation, 2021). In Napa, for the fiscal year 22/23, the City budgeted approximately \$2.5 million for sidewalk repairs. For fiscal year 19/20, Napa had completed 276 repairs to sidewalks (City of Napa Public Works Operations, 2020).

Shade from trees can lessen the amount of UV radiation from the sun that hits the pavement. Therefore, shade protects the pavement resulting in less frequent and costly repairs. Strategically planting large broadleaf trees can reduce the amount of sun damage. In fact, a 2005 study by McPherson and Muchnick looked at the cost benefit of shade mitigation strategies and found that large hackberries were projected to save \$7.13/ square meter (\$0.66/square foot) over the 30-year period compared to the unshaded street.

The tree inventory documented the narrowest dimension of each community tree's growth space, in feet. Napa has 3,393 tree planters that are less than 4ft, 21,007 planters 4-8ft, and 12,828 planters that are greater than 8ft (Figure 10). New tree plantings match the tree's mature stature with the planter size.

When trees are planted in adequate planter spaces, many infrastructure conflicts do not arise. In Napa's past, many large-statured street trees were planted in narrow planter strips. Today, the City of Napa is repairing widespread damage to sidewalks, curbs, and gutters. The City approaches mitigation on a case-by-case basis to help address the needs in different circumstances in a way that meets the community's needs.

NAPA PLANTING SPACES

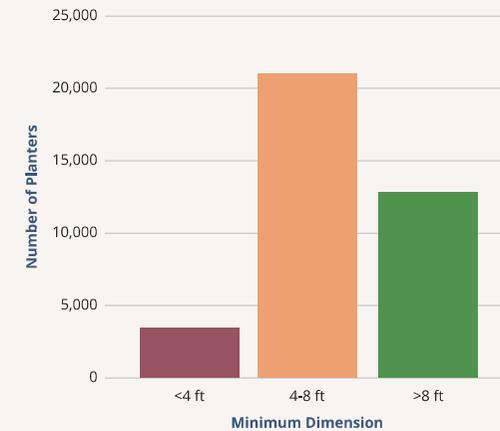


Figure 10. The size of available community tree planter spaces in Napa.

The most influential example of this in recent years was the Waverly Street sidewalk repairs through the City's residential sidewalk program. To address the number of emergency calls from mature Raywood ash and trip/fall hazards from buckling sidewalks, the City prioritized repairs which had been delayed for many years. As infrastructure repairs and prompt replacement plantings transformed the street, pop-up events and community meetings hosted by the City aided in gathering increased community support. By the end of the process, several residents opted to preserve the street trees in front of their property while the majority chose tree removal and replacement.

City of Napa Departments

Parks and Recreation Services

Oversees the management of 55 parks spanning 800 acres, including landscaping and facilities management as well as recreational programming

Parks and Urban Forestry

- Plants and maintains trees on public properties such as parks, landscaped medians, and trees in certain downtown areas
- Oversees the City's Tree Protection and Street Tree Replacement
- Works with Public Works, homeowners, contractors, and volunteers to carry out tree-related activities throughout town

Recreation and Facilities

Acts as a liaison between Parks and Urban Forestry staff and the general public by accepting and processing requests, complaints, permits and fees

Public Works Department

Maintains the City's streets, sidewalks, and drainage system, as well as their vehicle and equipment fleet

Sidewalks Program

Assigns tree work when tree and infrastructure conflicts arise through planned work and the Sidewalk Improvement Program

Engineering Division

Supports reforestation when trees need to be removed during Capital Improvement Projects

**5-year average:
annual number of maintenance activities**

206
Trees removed

830
Trees pruned

182
Trees planted

~12,000
Visual inspections

10
Tree risk assessments

364
Trees provided establishment care

City of Napa Boards and Commissions

Parks, Recreation and Trees Advisory Commission

- 8-member board of Napa residents and voters, enacted by Napa's Municipal Code (2.72)
- Advises the City Council and Parks and Recreation Director on various issues related to Parks and Recreation planning, including tree preservation, arboriculture, and the city's Tree Ordinance
- Acts as the decision-making body for actions set forth in the Municipal Code, such as plantings and removals (12.44) and significant and protected trees (12.45)

NAPA'S URBAN FOREST MANAGEMENT

The responsibilities for the planting, care, and maintenance of trees in Napa are shared by the City Parks and Recreation Services Department, the Public Works Department, and external partners including contractors and residents of the community such as property owners and volunteers.



External Partners and City of Napa Residents

Private Property Owners

- Hold the maintenance responsibility for all street trees besides certain downtown trees, including tree planting, pruning, and removal if necessary
- When property owners do not adequately perform this duty, the City will get involved

Private Tree Care Companies

- Perform tree pruning and removals on public properties through contracted work
- Hired by homeowners to perform work on ROW trees and trees on private property

Volunteer and Community Groups

Frequently involved with tree planting at city parks and on other public properties, often funded by grants and in partnership with Parks and Urban Forestry staff or neighborhood organizations

Staff and Contractors

The Parks and Recreation Services Department is subdivided into two complementary divisions:

- Parks and Urban Forestry, which oversees the planning and on-the-ground management of Napa's 55 parks spanning 955 acres (City of Napa General Plan). Parks and Urban Forestry performs the majority of the City's tree activities.
- Recreation and Public Art, which oversees the City's two community centers and provides recreational programming such as sports leagues, camps, and events for youth, adults, seniors, adults with special needs, and more. The Recreation and Public Art Division acts as the central office for the City's forestry operations, including accepting requests and complaints from the general public, handling permits, and collecting fees.

Of the ~34,000 inventoried community trees, Napa's Parks and Urban Forestry Division is responsible for the full range of tree care activities for approximately 12,500 trees located in the City's parks and other public properties, such as landscaped median easements, as well as certain trees in the City's downtown region (note: this does not include natural area / open space trees). These tasks include planting, watering, pruning, removals, and risk assessments. For the remaining 21,500 street trees located within the right-of-way (ROW), the Division oversees the Street Tree Replacement Program. Although adjacent property owners are responsible for routine maintenance for street trees, the Urban Forestry Division has the authority to perform tree maintenance, such as pruning, removal, and replacement. The maintenance of street trees is the responsibility of the adjacent property owner and the Division works closely with adjacent property owners to promote street tree care through their permitting system and code enforcement. If removals are necessary, a fee is assessed and replanting is required. Many residents are either unaware of this responsibility or unwilling or unable to perform it, which can lead to enforcement and maintenance challenges.

Tree work tasks are typically scheduled based on requests from the public, which currently exceed the City's staffing capacity to perform them. Consequently, tree maintenance tends to be reactive and prioritize hazard trees (especially following storm events) and trees that are causing infrastructure conflicts. Trees on city property within open space areas are also the responsibility of the Division, for safety and clearance maintenance. When contractors perform tree work for the city, Parks and Urban Forestry also oversees their management and performs quality control. Parks and Urban Forestry estimates that approximately 40% of their time is dedicated to responding to emergencies and/or customer requests, 40% to the sidewalk replacement program, 10% to scheduled park tree maintenance, and 10% to replanting trees.

BUDGET AND FUNDING

Over the last five years, Napa has allocated an average of \$1,328,820 to urban forestry activities such as tree pruning, removals, planting, and other urban forestry tasks (Table 3). This funding for Napa's urban forestry program is provided through several different avenues, including the city's General Fund, Measure G, a general voter approved sales tax, and Measure U (formerly T), a special tax approved by Napa voters. Additional contributions are made on a project-by-project basis through the Capital Improvement Program, and the city's Sidewalk Replacement Program. Funding sources such as state and federal grant programs, like those administered through CAL FIRE, periodically supplement the program.

General Fund

Napa is already implementing the most important guideline for communities determining how to fund their urban forestry program, which is to ensure that their primary source of funding is consistently included as an item in the city budget. The majority of Napa's urban forestry funding comes from the city's General Fund, which has averaged over \$125 million, or approximately 36% of the city's \$345 million in total expenditures, over the last 5 years (Table 3). Of the General Fund, the Parks and Recreational Services Department receives an average of \$9.9 million, approximately 7% of the General Fund, and slightly over \$6 million of that goes towards the Parks and Urban Forestry Division \$1.3 million is specifically dedicated to urban forestry work (FY 2020-2021 through FY 2024-2025 budgets).

NAPA'S CITY BUDGET

Napa City Budget (5-year Avgs.)	5-year Avg.	Tree-specific %	FY 24-25	FY 23-24	FY 22-23	FY 21-22	FY 20-21
Total Expenditures	\$345,108,250	0.4%	\$309,589,000	\$323,258,000	\$500,247,000	\$247,339,000	—
General Fund	\$125,340,250	1.1%	\$128,088,000	\$123,569,000	\$139,600,000	\$110,104,000	—
Total Parks and Recreation Services (P&R)	\$9,859,255	13.5%	\$10,394,810	\$10,833,490	\$13,037,359	\$8,515,870	\$6,514,745
Parks and Urban Forestry Division of P&R	\$6,066,271	21.9%	\$6,276,180	\$6,597,250	\$7,667,342	\$5,447,384	\$4,343,201
Tree-specific portion of P&R/UF of P&R*	\$1,328,820	—	—	—	—	—	—

Table 3. Napa's City budget, as well as the portions of total expenditures that comes from the General Fund and goes towards Parks and Recreation Services, Parks and Urban Forestry, and tree activities specifically. (Source: [Operating & Capital Budget Fiscal Years 2020-2021 through 2024/25](#), except otherwise noted, *an estimate of the 5-year average provided by the City Forester.)

Measure T

"Measure T" refers to a half-cent sales tax increase approved by Napa County voters in the General Election of 2012 under the Napa Countywide Road Maintenance Act. Implemented by the Napa Valley Transportation Authority's Taxing Authority, it is intended to supplement countywide efforts to improve transportation infrastructure by maintaining local streets. Measure T was implemented beginning in Fiscal Year 2018 and is estimated to provide a total of \$500 million over the next 25 years, including an additional \$8 million per year for the City of Napa to help maintain their 218 miles of existing roads, through paving and sidewalk repair programs.

The Urban Forestry Program Budget

The ~\$1.3 million 5-year average budget (2020-2025) accounts for:

0.4% of total expenditures	1% of General Fund
13.2% of Parks and Recreational Services funding	21.4% of Parks and Urban Forestry Division funding

Sidewalk Cost Share Program

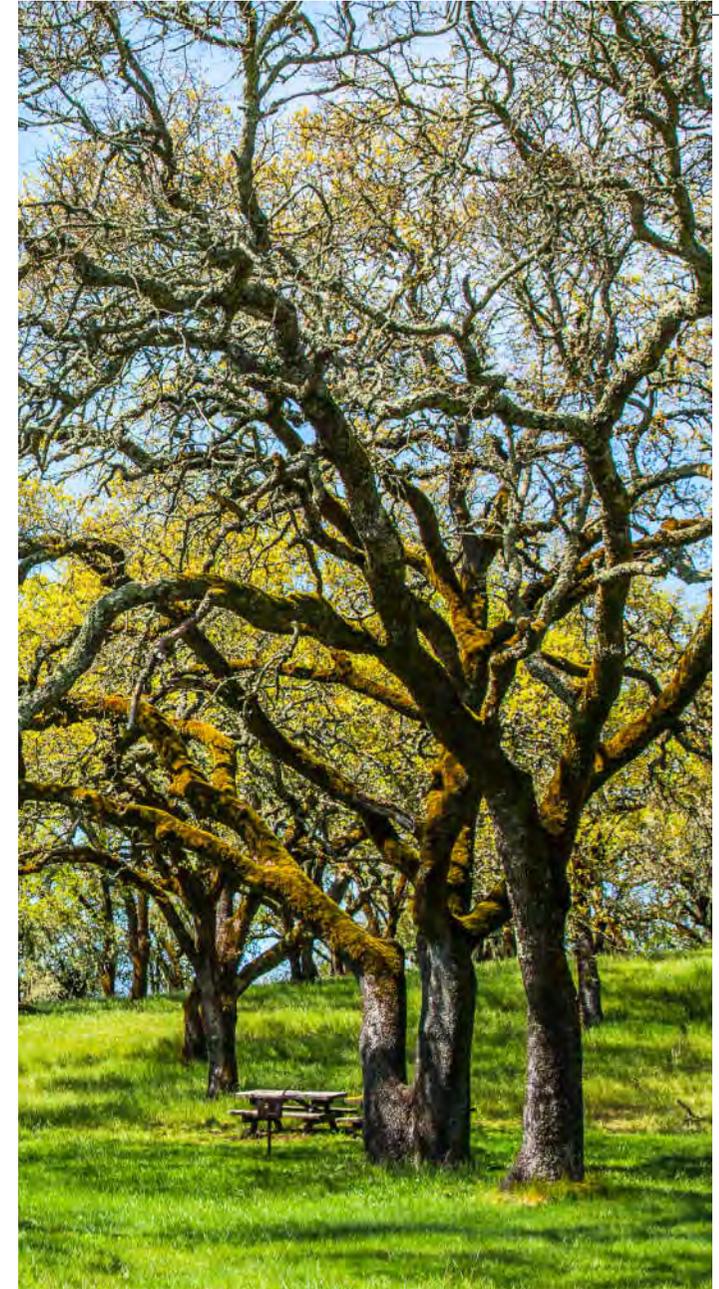
Napa’s Sidewalk Cost Share Program, funded through a portion of the State Gas Tax, is a program administered by the City of Napa’s Public Works Department to provide financial assistance to property owners through partial reimbursements for the repair of offset sidewalks and the removal or root shaving of trees causing damage to sidewalks. The program is administered annually on a first-come, first-served basis until funds are exhausted for that year. Homeowners can apply to take part in this program, prompting a Program Administrator to determine whether their sidewalk requires repair or replacement. If approved, work may be performed by an approved contractor or the homeowner, and the City will provide reimbursements up to a specified level for various sidewalk construction and/or tree removal tasks. All work requires a permit and must be performed in accordance with Napa Municipal Code Chapter 12.44. Prior to any tree pruning or removal, the City’s Parks and Trees Division will inspect the site and determine what is necessary. In the event that any trees are removed, they are required to be replaced with a new tree from the City’s Approved Tree List.

Tree Task	City of Napa			
	Total Budget	\$/tree	\$/capita	%
Tree Pruning	\$662,410	\$19.41	\$8.28	50%
Tree Removal	\$264,964	\$7.76	\$3.31	20%
Tree Planting	\$198,723	\$5.82	\$2.48	15%
Other	\$202,723	\$5.94	\$2.53	15%
Total	\$1,328,820	\$38.93	\$16.60	100%

Table 4. City of Napa urban forestry budget allocation (City of Napa Fiscal Year 2022-2023 Urban Forestry budget).

Urban Forestry Funding Benchmarking

Napa’s urban forestry program was benchmarked against national and regional communities using the report “Municipal Tree Care and Management in the United States: A 2014 Urban and Community Forestry Census of Tree Activities” (Hauer et al 2016), with monetary values adjusted for inflation to reflect values in the summer of 2025. The 2014 Municipal Tree Care Census is a robust data set that compiles urban forestry funding data from 667 communities throughout the United States and organizes them by geographic region and population size. The Western Region and the 50,000-99,000 Population Group, as well as the U.S. nationwide average, were used to benchmark Napa (population ~77,000) to better understand their program needs. When evaluated by the number of public trees, Napa’s \$38.93 per-tree expenditure is less than the national, regional, and 50-99k population group averages by a factor of 1.2-1.3x.



Exploring Alternative Sources of Funding to Support Napa's Urban Forest

At the time of the last Municipal Tree Census, at least 30% of communities were using some form of grant funding to support their urban forestry programs (Hauer and Peterson 2018), and that number has likely increased since then. While they should not be considered a primary source of funding, and should never replace a local, consistent funding source, grants offered by the federal and/or state government can be a great way for communities to supplement their program and accomplish major projects that might be outside the capacity of their regular operating budget.

MANAGEMENT TOOLS

Tree Ordinance

Napa's Municipal Code chapter 12.44 *Public Trees and Plants* outlines the regulatory framework for the protection, preservation, planting (following the Master Street Tree List), and care of public trees and 12.45 *Trees on Private Property* outlines some protections for protected native trees and significant trees on private trees. These chapters were reviewed using a set of criteria from the 2014 Municipal Tree Census and International Society of Arboriculture Ordinance Guidelines. The full ordinance review table is included in Appendix C and identifies several criteria that could be strengthened or are not currently addressed, including:

- Tree protection during construction
- Requirements for tree planting and compensatory planting
- There is a need to improve consistency around city policies so that current practices are included in the code and relevant policies that live outside of the code are cross referenced, specifically Napa's Tree Removal And Posting Policy and Tree Preservation standards

Including tree protection and codifying current policies around tree removal, planting, and preservation will help support tree canopy. Updating practices around tree protection during construction may necessitate additional resources, but staff are currently in place and addressing current policies around removal, planting, and preservation.

Napa's Municipal Code chapter 12.45 *Trees on Private Property* outlines protections for privately owned and maintained significant trees and protected native trees. This Chapter should be re-evaluated with the community to determine what the community wants, considering the current categories of trees receiving protections and the desired strength of protections. Align the community vision with the regulations and associated program needs.

Indicators of a Sustainable Urban Forest

Napa's urban forestry program was evaluated using a set of industry-defined sustainability indicators to assess current conditions in the urban forest resource, programming, and engagement (as defined by Clark et al 1997 and Kenney et al 2011). The sustainability indicators can be used to understand what areas of the program can be improved to meet industry recommendations.

This tool identifies 30 urban forest indicators, organized into three broad categories: **The Trees**, **The Players**, and **The Management Approach**. A summary is provided here, but see Appendix D "Sustainability Tables" for the full tables.

"**The Trees**" category rates 9 indicators related to Napa's physical trees and urban forest resource, including the total amount of canopy, whether that canopy is equitably distributed, characteristics of the tree population such as size distribution, species diversity, and condition, and even characteristics about tree planting sites such as suitability and soil volume. Within "The Trees" category, Napa rated 17% of indicators as low, 61% as moderate, and 22% as high.

"**The Players**" category rates 8 indicators related to the interaction and cooperation of people and groups influencing Napa's urban forest such as stakeholders, community members, and various City departments. Some of these indicators refer to members of the general public, neighborhood groups, potential funders, and other members of the green industry. Within "The Players" category, Napa rated 31% of indicators as low, 69% as moderate, and none as high.

"**The Management Approach**" category rates 13 indicators that describe the City's management of its urban forest resource, including whether or not the City has various assessments, plans or policies in place such as an inventory, canopy assessment, management plan (such as this one), tree protection policy, etc., as well as its levels of maintenance, staffing, and funding. Within "The Management Approach" category, Napa rated 4% of indicators as low, 58% as moderate, and 38% as high.

In total, the three categories collectively contain 30 indicators. Napa rated 15% of these as low, 62% as moderate, and 23% as high. Refer to the following table and figure for a summary of Napa's assessed levels in the three categories. The detailed results for each category are also included in Appendix D.



SUMMARY OF NAPA'S ASSESSMENT OF THE INDICATORS OF A SUSTAINABLE URBAN FOREST:

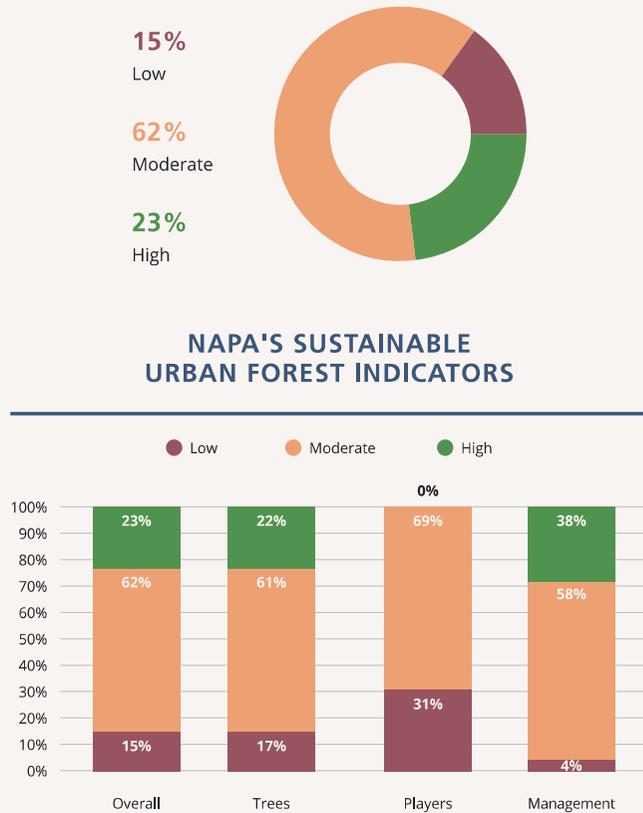


Figure 11. Summary of Napa's Assessment of the Indicators of a Sustainable Urban Forest (as defined by Clark et al 1997 and Kenney et al 2011).

Indicators of a Sustainable Urban Forest

Assessed Performance Level

		Low	Moderate	High
The Trees	Urban Tree Canopy			
	Equitable Distribution			
	Size/Age Distribution			
	Condition of Public Trees - Streets, Parks			
	Condition of Publicly-Owned Natural Areas			
	Trees on Private Property			
	Species Diversity			
	Suitability			
	Soil Volume			
	The Players	Neighborhood Action		
Large Private and Institutional Landholder Involvement				
Green Industry Involvement				
City Department/Agency Cooperation				
Funder Engagement				
Utility Engagement				
Public Awareness				
Regional Collaboration				
The Management Approach	Tree Inventory			
	Canopy Assessment			
	Management Plan			
	Risk Management Program			
	Maintenance of Publicly-Owned Trees (ROWs)			
	Maintenance of Publicly-Owned Natural Areas			
	Planting Program			
	Tree Protection Policy			
	City Staffing and Equipment			
	Funding			
	Disaster Preparedness and Response			
	Resilience			
Communications				
Totals	The Trees	17%	61%	22%
	The Players	31%	69%	0%
	The Management Approach	4%	58%	38%
	Grand Totals	15%	62%	23%

Table 5. Napa's Assessed Levels in the Sustainability Indicators in The Trees, The Players, and The Management Approach categories. (Indicators that were rated in between two levels are shown with both columns filled in.)

Existing Plans and Studies

Napa's existing plans and studies were reviewed to explore their current regard to trees or the urban forest. The following ranking of how well trees are incorporated into each document was used:

		
Trees Are Mentioned But Lack Clear Actionable Implementation Steps	That Are Incorporated But Require Revision Or Implementation	Trees That Are Fully Incorporated and Implemented

The review also considered relevance to this Urban Forestry Management Plan and answers the question “how can the City integrate each document into this Plan?” Integrating future planning efforts with this Plan is a best practice in integrating the many services provided by the City. For example, strategically integrating urban forestry into infrastructure and development initiatives allows the City to (1) incorporate appropriately statured trees to minimize infrastructure conflicts moving forward and (2) leverage trees and vegetation for stormwater management, air quality improvement, and overall environmental sustainability.

General Plan

Adopted in 2022, the Napa 2040 General Plan establishes long-term community goals and emphasizes sustainability, livability, and resilience. Trees are recognized as infrastructure critical for enhancing streetscapes, historic neighborhoods, public health, and climate resilience. It also highlights habitat preservation, canopy expansion, and equitable distribution of tree benefits as key priorities. The Environmental Impact Report (EIR) for the City of Napa's General Plan Housing Element evaluates the

environmental impacts of the General Plan Update and establishes the framework for future project review under California Environmental Quality Act. The report addresses public and agency comments, particularly concerns about tree impacts and habitat protection, noting that all future development will remain subject to permitting requirements for oak woodlands and riparian communities.

How to Integrate:

This Plan highlights and supports the General Plan's tree-related goals by setting measurable canopy targets and promoting updates to city guiding documents and standards related to tree planting and maintenance. Focused integration is especially relevant in the downtown area including Jefferson Street, and Soscol South, where the General Plan envisions expanded canopy.

Hazard Mitigation Plan

Napa's Hazard Mitigation Plan highlights both the benefits and risks associated with trees in relation to natural hazards. It notes that tree planting can positively influence air quality and regulate the local climate. At the same time, it acknowledges that trees may present hazards such as (1) damage to infrastructure and blocking evacuation routes during extreme events, such as tree failure during floods or windstorms and (2) potential fuel sources for wildfires, underscoring the importance of the City's ongoing fuel reduction projects.

How to Integrate:

This Plan further expands upon the environmental benefits of trees and supports goals and actions within the Hazard Mitigation Plan around tree maintenance. Recommendations for proactive tree trimming and cost share programs for private landowners can bridge both documents together for long term success. The Tree Canopy and Land Cover Assessment included a wildfire risk analysis and identified areas of the community at higher risk based on tree canopy metrics.

Storm Response

On February 2, 2024, Napa faced a severe storm that brought high winds, intense rainfall, and widespread damage throughout the community. Within hours, emergency calls flooded in reporting downed trees, blocked roads, flooding, utility outages, and damage to homes and vehicles. The City responded to 164 tree related issues in a two-day period. Despite the magnitude of the storm, the City of Napa responded quickly and efficiently. Public Works, Parks, Utilities, Fire, and Police Departments worked in close coordination by deploying crews, setting up barricades, clearing roadways, and collaborating with the local utility company to address critical hazards such as downed power lines. The speed and scope of the response prevented injuries, minimized property damage, and restored order across the city within a short timeframe.

The success of the City's response to the storm was made possible by rapid, cross-departmental communication and a well executed emergency operations framework. This event underscored the City's preparedness, responsiveness, and collaborative strength.

Parks and Facilities Master Plan *

The Park and Facilities Master Plan, adopted in 2010, outlines a 15+ year strategy for enhancing Napa's parks and recreation system, building on the Envision Napa 2020 General Plan. Covering 800 acres of parks and open space, it emphasizes community needs, recreation opportunities, and collaboration with the Napa Valley Unified School District. Trees are recognized as vital to creating inviting spaces, providing shade and comfort, supporting natural habitats, and delivering environmental and recreational benefits.

How to Integrate:

This Plan aligns with Park and Facilities Master Plan by prioritizing tree planting, preservation, and maintenance in parks to maximize shade, biodiversity, and resilience. Integration should include recognizing trees as assets, not just amenities.

Climate Emergency Resolution **

The Napa City Council resolution declares a climate emergency and commits the City to urgent action. It recognizes the scientific evidence of global warming, sets a goal of achieving net zero emissions by 2030, and directs that all city planning and policy decisions be evaluated through a climate lens. The City Manager is tasked with updating the General Plan to include climate goals, recommending budget and staffing resources to implement them, and developing partnerships with community groups, businesses, schools, and regional entities to educate and mobilize support for sustained climate action.

How to Integrate:

This Plan can align with the Climate Emergency Resolution by highlighting the City's 2030 net-zero goals, cross-referencing them where appropriate, and framing trees as a key tool for climate mitigation and resilience, and support the engagement of organizations, businesses, and schools through education and outreach to help advance climate action.

Napa County Voluntary Oak Woodlands Management Plan (2010) **

Napa County has the highest proportion of oak woodlands in California. The voluntary plan supports conservation and restoration of oak resources by creating stewardship programs, directing funding to high-value oak woodlands, mitigating development impacts, and promoting canopy expansion through land use planning and technical assistance.

How to Integrate:

This plan recommends tree preservation incentives and voluntary significant tree designations, both of which should be applied to oak woodland management and preservation strategies. Coordination with land use and transportation planning can ensure consistency between the two organization's objectives.

California Oak Woodlands Conservation Act of 2001 **

Passed in 2001, the Act supports voluntary, long-term stewardship of oak woodlands, recognizing their ecological, cultural, and agricultural value. It incentivizes conservation on private lands through financial support and encourages planning consistent with oak woodland preservation.

How to Integrate:

This Plan should incorporate oak woodland preservation by identifying priority areas for canopy preservation and enhancement as well as aligning incentives with stewardship programs. The Plan can serve as a tool to extend the acts conservation framework to urban settings and grant funding could be explored to lessen the financial burden on the city.

Standard Plans * - **

Overall, the standards are designed to create consistency across projects, support long-term durability and maintenance, and ensure compliance with regulatory and community expectations.

- **Planting Standards ****. These documents lay out standards for planting and staking a nursery tree. Planting standard notes detail contractors' responsibilities and step by step instructions for the planting standards diagram.
- **Root Guard Barrier Specifications ***. Planting standard T-5 has a diagram and step-by-step instructions to installing root guard barriers.
- **Parks and Landscape Standard Details ***. These provide a set of standardized design specifications intended to guide the development and maintenance of parks and landscaped public areas. The details include requirements for irrigation, backflow devices, tree bubblers and metal bollards, decomposed granite for trails and standard clearances for trees near those trails.

How to Integrate:

This Plan recommends updating Planting Standard T-1 to reflect current best management practices. Revisions should include reviewing planting depth and watering pipe placement. This Plan recommends alternative approaches to tree and infrastructure conflicts that prioritize tree health and urban resilience (e.g., developing specifications for the installation of structural soils, suspended pavement systems, and permeable pavements to support healthy root growth in urban settings).



Tree Removal and Posting Policy **

The policy regulates tree removals based on conditions such as death, disease, hazards, or construction conflicts. Alternatives to removal must be considered, and notification requirements vary by circumstance, with opportunities for public protest. Replacement is required to ensure canopy continuity.

How to Integrate:

This Plan can strengthen the policy through a review process that recommends the City incorporate compensatory planting / tree replacement guidelines and links removal decisions to canopy goals. It should also integrate communication protocols for public engagement on tree removals.

Tree Preservation Standard **

The standards are designed to protect and promote the long-term health of public trees (in rights-of-way, easements, and public property) and designated Significant Trees on private property from damage during construction and post-construction measures.

How to Integrate:

This Plan can set goals to further integrate tree protection during construction into the Tree Preservation Standard and municipal code. The plan development process also includes a review that recommends updates to better align the city's current practices with industry standards.

ReOaking North Bay **

This regional initiative seeks to restore valley oak and associated oak species lost to development. Its goals include re-establishing sustainable oak populations, improving wildlife connectivity, ensuring climate and fire resilience, and restoring areas of oak loss through node expansion, corridor creation, and population protection.

How to Integrate:

This Plan can adopt re-oaking principles by prioritizing oaks in species selection guidelines, specifically in natural areas, riparian corridors, and restoration zones. Integration also applies to the canopy connectivity study locating areas where planting would enhance connectivity across the community.

Napa Stream Maintenance Manual ***

The manual outlines strategies for invasive tree and plant management, as well as maintenance of riparian trees to balance flood risk, habitat protection, and invasive species control. It emphasizes selective removal, use of mechanical/chemical techniques, and the need for adaptive management based on site conditions.

How to Integrate:

This Plan incorporates invasive species management standards consistent with the Stream Manual. Coordination between flood risk reduction and urban forestry goals will allow tree planting efforts to support biodiversity while maintaining safe channel function.

STANDARD PLANS NOT CURRENTLY IN PLACE

This section provides a description of common plans Napa currently does not have and how they could benefit the urban forest upon development and implementation.

Storm Water Management Plan

A Storm Water Management Plan serves as a guide in best management practices for stormwater runoff, with the goal of meeting federal standards for water quality and the General Plan's goals in restoring the Napa River watershed. This plan should integrate the urban forest with traditional engineered

systems (e.g., pipes and drains) by providing design options that use trees and planters to intercept and filter rainfall, such as bioswales and stormwater tree pits.

Tree Manual

A Tree Manual would serve as a guide for planting, caring for, and protecting trees within the community. It would establish clear standards and best practices, meant for use by city staff, developers, contractors, and residents alike, helping ensure that trees are planted correctly and maintained for long-term health. By offering science-based guidelines, the manual supports consistent decision-making, serves as an educational resource for residents and community groups, making it easier for everyone to contribute to the growth of a resilient and sustainable tree canopy.

Planting Plan

A tree planting plan uses data from the tree inventory and the tree canopy and land cover assessment to prioritize tree planting in areas of greatest need. A planting plan would be a one- to five-year plan that builds off of the current planting and removal activities performed by the City. Industry standard guidelines recommend planting, at minimum, the same number of street trees that are removed each year to preserve tree canopy cover.

The City of Napa is meeting this standard and currently plants approximately 180 community trees per year, mostly to address removals. A planting plan would allow the city to address broader city goals through tree planting like canopy connectivity, equity, and help minimize negative hardscape interactions. A tree planting plan can be incorporated when developing a management plan or as a standalone document.



“

“We have to realize that the climate is changing. Trees provide many important services—shade, sequestering carbon, cooling our streets to support alternative transportation. We need to do everything in our power to preserve mature trees and plant additional trees.”

— Community Survey Respondent



SECTION 2: WHAT DO WE WANT?

COMMUNITY AND STAKEHOLDER ENGAGEMENT

A critical component of the development of Napa's Urban Forestry Management Plan was engaging the City's staff, stakeholder groups, and residents to understand the issues, opportunities, and challenges they see regarding their community's trees and urban forest as a whole. The information and feedback received during City Staff, Community, and Stakeholder Engagement informed the Plan's themes, recommendations, and action items.

City Staff and Stakeholder Engagement

Engagement was conducted through a series of interviews, meetings, and a questionnaire shared with the following groups within the City of Napa:

- Parks and Recreation Services
- Public Works (Construction, Engineering, Private Projects, Public Projects, Operations, and Utilities)
- Economic Development (Long Range Policies, Climate, Planning)
- Risk Management

And the following external stakeholders:

- Napa County Flood Control and Water Conservation District
- Parks, Recreation, and Trees Advisory Commission
- Napa County Public Works
- CAL FIRE

Advisory Bodies

Advisory bodies met with the consultants and/or the City of Napa Project Team to provide input on their respective elements of expertise regarding community outreach, potential urban forestry policy changes.

- The **Community Outreach Advisory Committee** consisted of the Project Team and Napa Resource Conservation District.
- The **Parks, Recreation, and Trees Advisory Commission (PRTAC)** was engaged throughout the planning process.

During the development of the Plan, items were brought to the PRTAC:

- **October 2021** – Application to the 2021/2022 Urban and Community Forestry Grant Program
- **May 2022** – CAL FIRE Urban & Community Forestry Grant Award
- **November 2023** – Project update
- **April 2024** – Stakeholder interview discussion
- **November 2024** – Plan reporting on the tree inventory/canopy cover assessment
- **February 2025** – Plan input on priority planting areas and private property owner engagement
- **August 2025** – Review and approval of updated Master Street Tree List
- **January 2026** – Partial Plan draft review (executive summary, vision, and goals)
- **February 2026** – Plan review

Community Engagement

The community was engaged through an online survey, a series of community meetings and pop-up events, volunteer tree planting events, and educational workshops.

Community Meeting

The project team hosted a hybrid (virtual and in-person) community meeting on June 19, 2024 from 4:30-7pm to kick-off the community engagement portion of the Plan.

The community meeting included a presentation from the consultants that explained the current tree cover across the community, the community tree resource, and the Plan

development process. After the presentation, there was a question-and-answer session and an open house with posterboards showing tree canopy cover. During the open house portion, City staff were available to allow for discussion and more specific questions. The meeting presentation was recorded and posted on the City's website for reference.

Online Survey

The Napa Urban Forestry Management Plan Community Survey was open from June 19-August 19, 2024. Digital versions of the survey were offered in English and Spanish. A total of 147 people responded to the survey, which asked a range of questions about Napa's trees and their benefits and challenges to identify themes and priorities that should be considered during plan development. The survey explored public opinions on the past, present, and future of the urban forest, the city's effectiveness in maintaining it, attitudes toward trees and new plantings, and the benefits considered most valuable. Overall, responses were positive toward trees and expanding the urban forest canopy. The complete results are available in Appendix E.

Educational Information and Workshops

The City partnered with Napa Resource Conservation District (NRCD), a local district that supports conservation and natural resource management throughout the county, on community engagement while developing the Plan. NRCD supported all of the outreach and education initiatives while developing the plan. These events include two evening workshops focusing on policies around tree's and another meeting titled "Right Tree Right Place".

Pop-Up Events

NRCD held two pop-up events to provide educational opportunities for community members interested in learning more about trees and providing feedback on Napa's current and future urban forest. Pop-ups were held on Arbor Day and Earth

Day in locations to capture the input of community members who might not otherwise attend a meeting. These events also include providing tree care educations to the community.

Educational Information

The survey revealed interest in the importance of trees as well as guidance on tree planting and care. The project included the development of several education handouts as well as updates to existing tree species list and city standards.

A goal of the Plan was to provide educational information to the community. The City created a web-page dedicated to the Plan to provide updates to the community and a central location for educational information. Information was posted throughout the process, and included links to recorded workshops, the survey, educational materials, and the Plan.

Volunteer Planting Events

The City of Napa Project Team and NRCD held Volunteer Planting Events to provide community members with hands-on opportunities to help implement some of the goals identified in the Plan.

What did we hear during community engagement?

Citywide Trees and Tree Canopy

- Nearly two-thirds of survey respondents (65%) agree that **there are too few trees** in Napa, while a third (33%) feel that there are the right amount of trees.
- The vast majority of survey respondents (90%) agree that **trees growing in Napa's public right-of-way are important.**
- Among survey respondents with trees growing on their private property, nearly all (93%) agreed that **private property trees are important to them.**
- Most Napa survey respondents feel that **having large trees where they live is a privilege (45%) or a part of living in Napa (28%),** while a smaller portion feel negatively towards large trees (8%).

Benefits of Trees

- The top benefits of trees identified by survey respondents are **shade (23%), climate change mitigation (18%), wildlife habitat (17%), air quality improvement (12%), aesthetics (11%),** and **support for mental and physical health (9%).**

Challenges with Trees

- The top consequences caused by trees identified by survey respondents are **infrastructure conflicts** such as damage to sidewalks (27%), **tree/limb failure** and the potential damage caused by it (23%), **litter** from leaves, seeds, sap, fruit, etc. (12%), **costs** of maintenance or removal (10%), **allergens** (9%), and **fire danger** (8%).

Tree Planting

- Some survey respondents (40%) **would be willing to plant trees on their private property,** while others feel that they already have enough trees (27%) or don't have enough space (16%).
- The greatest barriers to survey respondents planting new trees on their private property are **financial resources** and a **lack of information** on species selection (17% each).



Tree Preservation

- When determining which trees should be preserved, Napa survey respondents rated all criteria similarly, but the most important criteria include the tree's **environmental benefits**, **location**, and **wildlife habitat value** (17% each).

City Tree Management

- Most survey respondents (56%) are **satisfied with the current level of care for City street trees**.
- Survey respondents feel that the most important services offered by Napa's Parks and Recreation Services Department's Trees and Parks Division are tree **pruning** (30%) and **planting** (27%), followed by the neighborhood sidewalk repair program (23%).
- If additional funding was available, the maintenance type that survey respondents would most like to be increased is **street tree replacement** (41%), followed by **removal of trees causing sidewalk displacement** (24%).
- Most survey respondents (89%) have never pulled a permit for tree work, but among those who have, half felt **the process went smoothly** (50%), others felt the process took too long (38%), and some were unclear about which application to use (13%).

Future Community Engagement

The urban forestry topics that survey respondents are most interested in learning more about include **species selection** (21%), **current tree regulations** in Napa (17%), and **general tree maintenance** (16%).

- The best way to share new information with survey respondents is **electronic or web-based** (26%).

NAPA COMMUNITY SURVEY RESPONSE HIGHLIGHTS

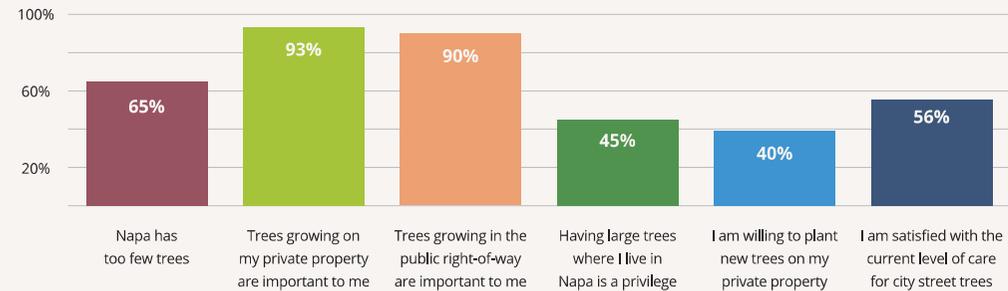


Figure 12. Selected responses from the Napa Urban Forestry Community Management Plan Survey. The complete responses are available in Appendix E.

"[Trees should be preserved on the basis of] health, appropriate tree planted in appropriate location, [and our] ability to maintain."

- COMMUNITY SURVEY RESPONDENT

ISSUES, OPPORTUNITIES, THEMES, AND PRIORITIES

The stakeholder and community engagement activities and assessment of the Indicators of a Sustainable Urban Forest revealed the following urban forestry themes and priorities in Napa. These themes and priorities were integrated into the Plan's recommendations and action items.

Value of Urban Trees and Canopy

Napa residents value and appreciate their urban trees - especially, large, healthy, mature native trees - particularly due to their benefits in providing shade, reducing urban heat islands, sequestering carbon, and providing habitat for wildlife, which residents feel outweigh the costs of maintaining the trees.

Community Character and Aesthetics

Community members agree that having large, mature trees is part of Napa's unique character that needs to be carefully planned for, maintained, and preserved.

"[Trees are] part of our beauty and quality of life here."

- COMMUNITY SURVEY RESPONDENT

Shade and Heat Island Mitigation

The most frequently referenced benefit of trees across all community survey questions was their ability to provide shade, cool neighborhoods, reduce the urban heat island effect, and even encourage alternative forms of transportation by keeping trails cooler.

Carbon Capture and Climate Change

Napa residents would like to see trees planted in a way that will allow them to grow to their maximum potential and store as much carbon as possible. Community members would also like to see trees integrated into Napa's other climate/carbon goals and policies.

Habitat and Ecosystem Benefits

Napa residents deeply value the benefits of trees to other wildlife, particularly pollinators, and would like to see trees planted in an intentional way that makes them a part of a complete healthy ecosystem.

Trees as a Public Resource

Napa residents value the services that Parks and Recreation provides in creating a healthy urban forest in parks and other public spaces as a community resource. Residents also value the unique benefits of trees planted along roadways and appreciate the services that Parks and Recreation provides to plant and maintain trees in rights-of-way.

Tree and Infrastructure Conflicts

Tree health and long-term viability are frequently compromised by conflicts with infrastructure design and insufficient growing conditions. Narrow right-of-way (ROW) zones, poor soil volume, and sidewalk damage from roots are common issues.

Stakeholders called for updated streetscape standards, early planning coordination, and updated tree protection standards to minimize tree impacts and ensure trees are treated as essential infrastructure. In general, Napa residents want to have the right tree in the right place and are willing to remove and replace them when they are not. Many community members expressed desire for the removal and replacement of trees for various reasons, including safety hazards, infrastructure conflicts, and inappropriate species or site selection.

Species and Site Selection

Community members feel that there is an overabundance of non-native, invasive, and nuisance species in Napa's urban forest, and that these species should be removed and replaced with trees that are native to California and/or more tolerant of drought conditions. New tree plantings should also focus on selecting species that are appropriate for Napa's unique environment, while considering the changing climate, water availability, and increasing fire risk. There is also an interest in enhanced education on this subject, including updating Napa's approved species list.

Water Resilience

Trees are essential to climate adaptation, water conservation, and ecosystem restoration, but current management practices often fall short. Stakeholders expressed concern over mismatches between species and irrigation sources, lack of ecological diversity, and limited alignment between urban forestry and watershed management. Opportunities exist to integrate trees more fully into resilience planning.

"Shade trees and urban forests will play an increasingly important role with extreme heat and the need for shade along public streets/sidewalks, particularly for kids walking to/from school and other vulnerable populations."

- COMMUNITY SURVEY RESPONDENT

Tree Preservation vs. Removal and Replacement Amidst Development Pressures

While there is an openness to removing and replacing many trees, the exception is large, mature trees that are healthy and actively providing community benefits. Stakeholders consistently emphasized the community's deep attachment to native, mature trees and the challenges of balancing the public's desire for tree preservation with safety and development needs. Concerns included inconsistent or unclear information around decision making frameworks (e.g., tree removal and protection policies). Survey respondents also expressed disappointment that in some locations, trees were removed and never replaced. Costs, benefits, and potential risk need to be evaluated when determining whether to preserve or remove and replace trees. While removal is sometimes necessary, there's a need for clear communication, proactive management, and engagement around current (and desired future) preservation policies.

Targeted Tree Plantings

Community members expressed a desire for more trees to be planted throughout Napa, especially to replace mature hazardous trees that needed to be removed and in low-canopy areas, along rights-of-way, and in underserved neighborhoods. Napa residents would like to see aging trees replaced with more appropriate native, drought-tolerant species that are suitable for the size of their planting space.

Need for Increased Funding, Staffing Capacity, and Maintenance

Napa residents agree that assessing tree health and providing the maintenance necessary to keep trees healthy is one of the most important services that the City provides. However, some residents are concerned that Napa's trees - especially large, mature trees - are not receiving adequate maintenance in order to remain healthy, and would like to see an increase in services. Many survey respondents felt that additional maintenance is

needed but is not being provided because it is too costly, so additional funding or resources are necessary.

Need for More Data Tracking

Stakeholders expressed that there is a strong need for better data systems to support tree management. The lack of a centralized inventory or digital tracking hinders planning, evaluation, and transparency. Stakeholders called for tools like an inventory asset management system and emphasized the importance of regular monitoring and evidence-based protocols to guide removal and investment decisions.

Need for More Education

Community members and stakeholders alike expressed a desire for more education about trees - especially selecting appropriate species and designing appropriate planting sites during early planning phases. Persistent public confusion around tree ownership, maintenance responsibilities, and city policies points to the need for improved outreach. There is also a need for more education around pruning practices and encouraging proper techniques to promote optimal structure throughout the life of the tree.

Need for Code and Policy Review and Enforcement

Tree-related risks—such as sidewalk damage, infrastructure conflicts, and falling limbs—are a growing concern. However, enforcement of tree-related codes is often reactive and under-resourced. Many stakeholders expressed confusion about existing tree-related codes, roles, and responsibilities and cited legal ambiguity, limited staffing, and unclear ownership as major barriers to effective risk mitigation and code compliance. Current ordinances are seen as fragmented, outdated, or unclear—both to staff and the public. There is broad support for policy reform to improve clarity, expand protections, and provide better tools for enforcement and long-term tree management.

Barriers to Maintaining Trees on Public Property

Stakeholders highlighted ongoing challenges around tree care responsibilities, especially after initial planting. For example, maintenance after installation is not required by code, and there are not clear roles for tree installation, watering, pruning. Without clearly defined maintenance roles or consistent standards, tree survival and performance vary widely. The reliance on property owners to maintain public trees also raises equity concerns, particularly in under-resourced neighborhoods, as tree survival varies based on neighborhood capacity.

Barriers to Planting Trees on Private Property

While some residents are willing to plant new trees on private property, many are unable to due to a lack of available planting space, being a renter, or living in an HOA that prohibits it. The main barriers cited by survey respondents were a lack of financial resources and/or education about what kind of trees to plant and how. Some residents are also concerned that existing trees are not getting enough water and are wary of planting new trees due to a lack of water availability.

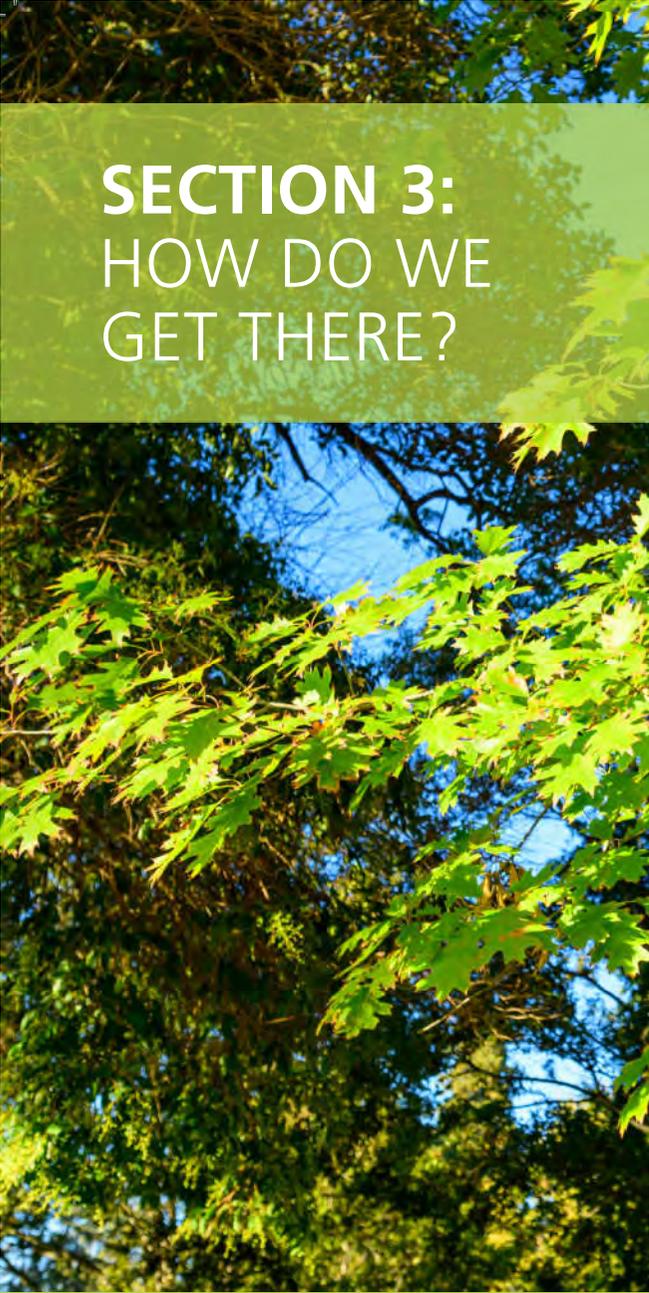
"I would really like special attention for tree planting in lower income neighborhoods. There are areas [...] that have little to no trees on some of those streets."

- COMMUNITY SURVEY RESPONDENT



"[Having large trees where I live] is one of the main reasons why we chose Napa – large trees bring beauty (healing for humans), reduce air pollution, and provide essential carbon removal."

— Community Survey Respondent



SECTION 3: HOW DO WE GET THERE?

The goals, recommendations, and action items of this Plan are based on various information and data gathered and analyzed during the planning process, including Napa's:

- Assessment of the Indicators of a Sustainable Urban Forest
- Tree Planting and Care memo
- Resource Analysis of the community tree inventory
- Tree Canopy and Land Cover Assessment
- Review of the City's Tree Ordinances (municipal code section 12.44 and 12.45)
- Discussions surrounding existing policies (the Tree Preservation Standard and Tree Removal and Posting Policy)
- Themes and priorities identified during community engagement and stakeholder meetings

They were also informed by feedback received during the community engagement and outreach events.

Four main recommendations are provided to help guide Napa in achieving each of the Parks and Recreation Department's identified goals to **Preserve, Protect, Promote, and Plan** for the City's trees and the future of their urban forest. For each goal, a vision statement and brief description of current conditions and needs are provided, as well as recommendations to help the City achieve their goals. The action items listed in the table that follows are potential steps that can be taken to support the implementation of each recommendation.

ACTION AND IMPLEMENTATION

Each Goal presents recommendations and action items as well as an implementation plan that includes details on the departments involved, timeline, and funding needs. While the strategy provides general, short-term timeframes, it is essential for the plan's implementation to remain adaptable and dynamic. This flexibility allows for adjustments in response to evolving needs, priorities, available resources, and opportunities within Napa.

Although numerous recommendations in this Plan necessitate the allocation of City resources and effort, the plan also presents opportunities for active involvement from residents, stakeholders, and other City and external partners. Encouraging collaboration and participation from these groups can significantly contribute to the successful implementation of the Plan.

Key

Departments Involved in Implementation (Depts. Involved)

- Parks and Recreational Services (PRS)
- Public Works (PW)
- Legal
- Economic Development (Planning)

Timeline to Begin the Implementation of the Action (Timeline)

In progress, 1-3 years, 4+ years

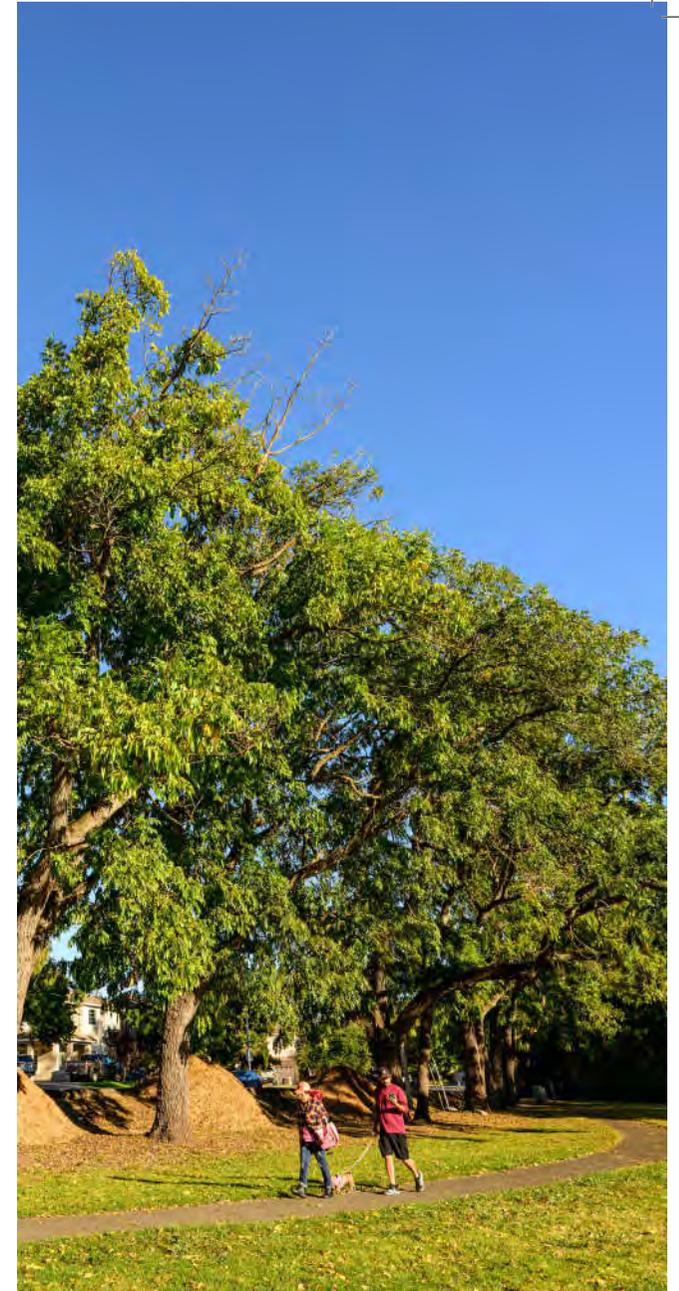
Funding

- "\$" Implementations is achievable with existing resources
- "\$\$" Existing resources may be used to further these goals, while full implementation will likely need additional resources
- "\$\$\$" Implementation would need additional resources likely through council action

GOALS AND RECOMMENDATIONS

Goal	Recommendations
 Preserve	<p>1-1 Provide ongoing, proactive maintenance to trees throughout all stages of their life cycles to maximize chance of successful establishment and optimize tree health, growth, and community benefits</p>
	<p>1-2 Preserve large, healthy, mature trees whenever possible to maximize and sustain community benefits</p>
	<p>1-3 Plan and prepare for invasive and nuisance species including plants, pests, and pathogens to protect Napa's urban forest</p>
	<p>1-4 Increase genus and species diversity in new and replacement tree plantings to increase resiliency in the urban forest and reduce reliance on the most prevalent species</p>
	<p>1-5 Evaluate Parks and Urban Forestry Division staffing and resources to keep up with the City's forestry program needs (asset management and maintenance, administrative, regulatory framework, education and outreach, and visioning)</p>
 Protect	<p>2-1 Identify gaps in existing tree planting, maintenance, and preservation standards in the City's municipal code; make updates where necessary</p>
	<p>2-2 Ensure that tree-related policies in any other relevant City documents, such as the Approved Street Tree List, Street Tree Planting Specifications, Tree Preservation Standard, and Tree Removal and Posting Policy, are up to date, aligned with, and referenced in the municipal code and other City planning documents</p>
	<p>2-3 Develop new standards and educational materials to address issues affecting Napa's urban forest that are not included in current city code or policies</p>
 Promote	<p>3-1 Communicate important information about the benefits and maintenance needs of Napa's community trees to the general public, private property owners, potential partners, funders, and decisionmakers</p>
	<p>3-2 Engage community members in the decisionmaking process around current and future tree management and planting to encourage community buy-in and support</p>
	<p>3-3 Strengthen and develop partnerships with residents, nonprofit groups, organizations, private sector companies, developers, potential funders, and similar communities to share knowledge and resources and work together to promote Napa's trees</p>
 Plan	<p>4-1 Develop a functional and sustainable urban forestry management program with adequate staffing, resources, and support from other City partners</p>
	<p>4-2 Manage existing tree and infrastructure conflicts in Napa's urban forest and prevent future tree and infrastructure conflicts</p>
	<p>4-3 Plant, replace, and preserve trees at strategic levels and locations around the City to align with Napa's canopy goals, achieve an equitable distribution of tree canopy, and ensure consistent canopy coverage as older trees reach the end of their useful life</p>
	<p>4-4 Develop and implement standardized data tracking processes for the City's tree inventory, canopy, and Urban Forestry Management Plan goals and action items</p>

Table 6. Goals and Recommendations Overview.





PRESERVE

Vision

Trees are an integral part of the community and key to the health and character of neighborhoods, parks, and streets across Napa. Preserving healthy trees and ensuring young trees can grow to reach their full canopy potential will contribute to the overall health of the urban forest. Tree preservation will be supported by encouraging practices aiming to effectively sustain existing trees throughout their life cycle.

Description

A tree's ability to reach maturity and provide its full potential depends on proper planting and consistent care throughout its lifespan. To support long-term health, safety, and return on investment, Napa should adopt best management practices and align its operations with industry standards for species and nursery stock selection, planting and establishment care, routine inspections and pruning cycles, and integrated pest management. These practices will give City-managed trees the best chance of successful establishment, long-term health, and longevity. Additionally, whenever possible, Napa should aim to preserve healthy, mature trees of desirable species on both public and private property since they provide the greatest community benefits.

Themes

- Trees as a Public Resource
- Tree and Infrastructure Conflicts
- Species and Site Selection
- Water Resilience
- Need for Increased Funding, Staffing Capacity, and Maintenance
- Need for More Data Tracking
- Barriers to Planting Trees on Private Property

1-1 Provide ongoing, proactive maintenance to trees throughout all stages of their life cycles to maximize chance of successful establishment and optimize tree health, growth, and community benefits			
Action	Depts. Involved	Timeline	Funding
Implement industry standards when selecting, planting, and providing establishment care (irrigation, mulch, and staking) for new trees	PRS	In progress	\$
Consider contracting out a portion of maintenance needs to achieve annual pruning and maintenance goals	PRS and Public Works	In progress	\$\$
Provide regular inspection, structural pruning for young trees, and a routine pruning cycle for all City-maintained trees to make the urban forestry program more proactive	PRS and Public Works	4+ years	\$\$
Schedule and assign work based on the level of need (high-priority tree work is to be completed as soon as possible and before lower priority work)	PRS	1-3 years	\$

Table 7-1. Action and Implementation Plan for Recommendation 1-1 in Napa's Preserve goal.

1-2 Preserve large, healthy, mature trees whenever possible to maximize and sustain community benefits			
Action	Depts. Involved	Timeline	Funding
Protect and maintain trees and desirable forest stands, focus preservation efforts on trees that are especially important in Napa, such as: existing healthy and mature trees, significant trees, and protected native trees as defined in Municipal Code Chapter 12.45	PRS and Planning	In progress	\$
Continue to protect important trees on city property by creating a designation for mature and desirable public trees to increase visibility of the City's urban forestry program	PRS and Public Works	In progress	\$

Table 7-2. Action and Implementation Plan for Recommendation 1-2 in Napa's Preserve goal.

1-3 Plan and prepare for invasive and nuisance species including plants, pests, and pathogens to protect Napa's urban forest			
Action	Depts. Involved	Timeline	Funding
Develop strategies for managing invasive and nuisance species and pest and pathogens across public and private properties, such as monitoring, management, collaborations, and education	PRS	4+ years	\$\$
Protect culturally important species such as oaks and habitats such as riparian areas, which are threatened by some of the pests of greatest concern for Napa's community forest	PRS and Planning	4+ years	\$\$
Follow integrated pest management and best management practices, when monitoring for and dealing with invasive and nuisance species (identify the most appropriate procedures and protocols, ensure proper training and licensing)	PRS	In progress	\$

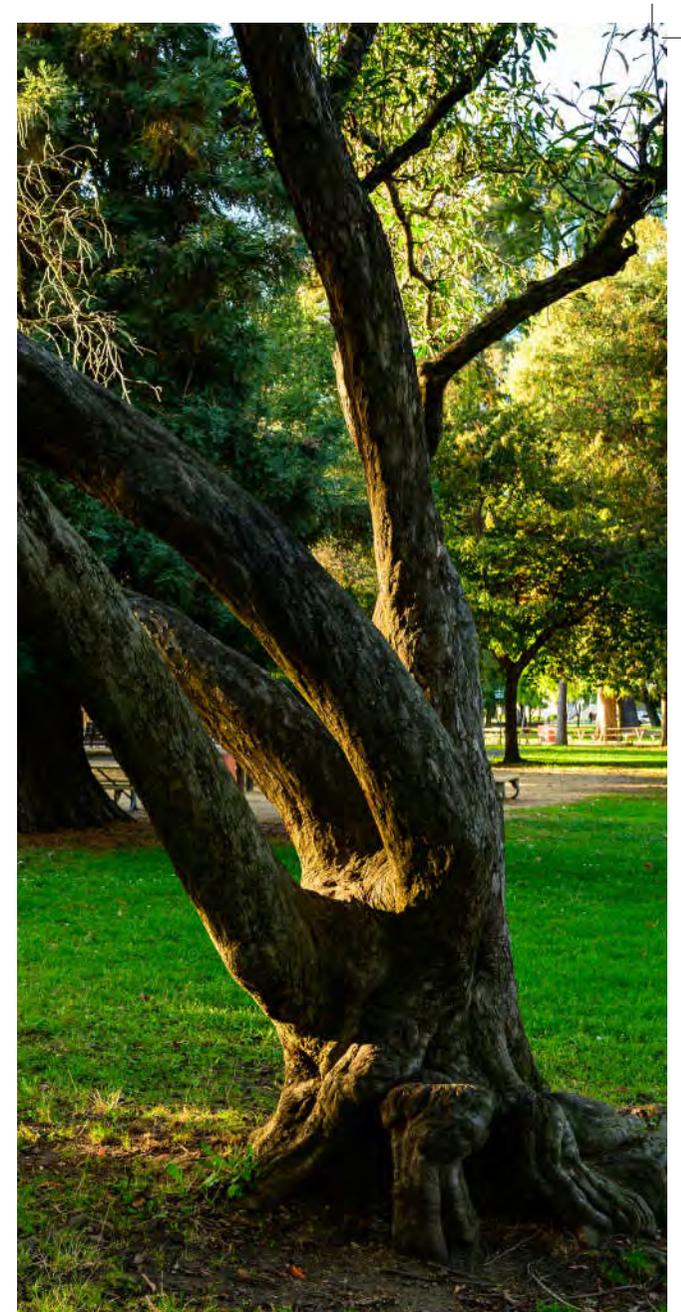
Table 7-3. Action and Implementation Plan for Recommendation 1-3 in Napa's Preserve goal.

1-4

Increase genus and species diversity in new and replacement tree plantings to increase resiliency in the urban forest and reduce reliance on the most prevalent species

Action	Depts. Involved	Timeline	Funding
Continue to align species selection with the requirements Napa's approved species list "Master Street Tree List", including considerations for tree stature and planting space size	PRS	In progress	\$
Use the community tree resource data to reduce the planting of overutilized species that exceed the "10-20-30" rule for species diversity and monitor species performance	PRS	In progress	\$
Increase resilience in the urban forest by planting species that perform well in local and regional conditions (climate, wildfire, pests and pathogen threats), including introducing new species that indicate promising traits and avoiding species identified as invasive	PRS	In progress	\$
Expand the planting of appropriate native species and species that are resistant to local threats such as drought, fire, and regional pests while avoiding planting invasive and problematic species	PRS	In progress	\$
Use new and replacement tree plantings to improve diversity, increase benefits, and support an ideal age distribution of community trees	PRS	In progress	\$
<ul style="list-style-type: none"> • Prioritize planting replacement trees after community tree removals to maintain the current stocking level <ul style="list-style-type: none"> i. Consider integrating xeriscape programs with the tree replacement program (wherein residents plant the trees with development mitigation fund) 	PRS	In progress	\$
<ul style="list-style-type: none"> i. Maximize available resources and planting space by planting the largest statured tree that can be accommodated in a site where space and design allow. Implement right tree, right place principles and incorporate large statured trees where feasible. 	PRS	4+ years	\$\$
<ul style="list-style-type: none"> • Prepare planting plans that help the City track the community tree resource of stocking levels and changes in species and genera abundance <ul style="list-style-type: none"> i. Areas with existing bare soil and grass/low-lying vegetation identified in the Canopy Assessment can be further analyzed for consideration for expanding canopy cover through tree planting 	PRS	1-3 years	\$
	PRS and Public Works	1-3 years	\$

Table 7-4. Action and Implementation Plan for Recommendation 1-4 in Napa's Preserve goal.



1-5

Evaluate Parks and Urban Forestry Division staffing and resources to keep up with the City's forestry program needs (asset management and maintenance, administrative, regulatory framework, education and outreach, and visioning)

Action	Depts. Involved	Timeline	Funding
Address resource shortages, expand in-house staffing, and/or increase contracted work to respond to Napa's routine and emergency tree maintenance needs in a proactive manner	PRS	4+ years	\$\$
<ul style="list-style-type: none"> Utilize the data in the public tree inventory Resource Analysis and work plans to predict upcoming tree maintenance and budgetary needs 	PRS	In progress	\$
Align funding with the long-term maintenance needs of trees and infrastructure in order to preserve tree benefits, prolong tree life, and manage risk and public safety.	PRS		\$
<ul style="list-style-type: none"> Review and update landscape assessment district funding structures to address chronic underfunding and reliance on General Fund subsidies <ul style="list-style-type: none"> Consider subsidized maintenance in equity-priority areas 	PRS	1-3 years	\$\$
<ul style="list-style-type: none"> Integrate the City's tree maintenance budget into citywide planning efforts; consider funding from the capital and operating budgets and the Parks general fund 	PRS and PW and Planning	In progress	\$
<ul style="list-style-type: none"> Communicate the cost of proactive maintenance to City Council and the community. 	PRS	In progress	\$
<ul style="list-style-type: none"> Explore additional funding for tree planting, replacement, and maintenance in parks and public spaces <ul style="list-style-type: none"> Consider bonding or performance guarantees for tree establishment 	PRS	In progress	\$\$
<ul style="list-style-type: none"> Consider bonding or performance guarantees for tree establishment 	PRS	4+ years	\$\$
Continue planned fleet replacement and equipment acquisition aligned with operational needs; address corresponding equipment needs as staffing levels increase	PRS and Public Works	In progress	\$\$

Table 7-5. Action and Implementation Plan for Recommendation 1-5 in Napa's Preserve goal.



ACTION SPOTLIGHT: STAFFING AND RESOURCES

Proactive management is at the core of any successful urban forestry program. When trees are regularly inspected and maintained, they can grow larger, live longer, have greater vitality and provide more benefits throughout their lifespans. However, the ability of any urban forestry department to operate on a proactive cycle is dependent upon having **adequate staffing and resources** available to complete the work necessary within the given timeframe.

For example, approximately 800 community trees are pruned each year. Current annual pruning practices are only able to address a portion of the pruning needs of community trees.

Studies have shown that when tree maintenance is delayed, both the amount of effort required and costs to complete the tasks steadily increase (Browning and Wiant 1997, Vogt et al 2015), whereas shifting from a reactive, request-based system such as Napa's to a systematic maintenance cycle could reduce costs by as much as 50% (AECOM 2013, Cascadia Consulting Group, 2001).



PROTECT

Vision

Tree protection policies programs and education are instrumental in establishing best practices that ensure the existing canopy cover is nurtured, enhanced, and protected for current residents and future generations.

Description

The City's ability to protect its tree canopy is dependent upon having policies in place that are both effective and enforceable. In addition to clearly defining the required practices and protections that apply to Napa's public and significant or protected private trees, these policies need to be understood and applied by City staff, contractors, and private property owners alike. Revisions and additions to Napa's Public Tree Ordinance (12.44), Tree Preservation Standard (12.45), and other relevant documents should focus on eliminating potential sources of confusion, aligning regulations across all City codes and policies, removing content that is unnecessary or burdensome to the City, and adding new content that promotes public safety and tree benefits while enhancing protections for both public and private trees.

Themes

- Trees as a Public Resource
- Tree and Infrastructure Conflicts
- Tree Preservation vs. Removal and Replacement Amidst Development Pressures
- Need for More Education
- Need for Code and Policy Review and Enforcement
- Barriers to Maintaining Trees on Public Property

2-1 Identify gaps in existing tree planting, maintenance, and preservation standards in the City's municipal code; make updates where necessary			
Action	Depts. Involved	Timeline	Funding
Update Municipal Code Title 12 Chapter 44 Public Trees and Plants to codify current practices (specifically within Napa's Tree Removal And Posting Policy and Tree Preservation standards) and eliminate contradictions across tree-related codes and policies	PRS, PW and Legal	4+ years	\$
• <i>Expand 12.44 to include protection of public trees during construction, tree protection zones, and requirements for tree planting and compensatory planting</i>	PRS, PW and Legal	4+ years	\$
<i>i. Define and require permitting processes for protection during construction</i>	PRS, PW and Legal	4+ years	\$
<i>ii. Establish a formal permitting and approval process that requires the submission and approval of a tree protection plan for public trees that would be impacted by construction activities prior to the commencement of construction activities</i>	PRS and Public Works	1-3 years	\$
• <i>Include relevant language from current policies and standards (e.g., Street Tree Removal and Notification Policy and Tree Preservation Standard), such as criteria for evaluating removal requests and notification requirements</i>	PRS	In progress	\$
• <i>Reference the most current guide on tree appraisals when determining penalties for illegal tree removals</i>	PRS and Planning	1-3 years	\$
Review Municipal Code Title 12 Chapter 45 Trees on Private Property (12.45), consider the current strength of private tree protections and potential integration with 12.44 when possible	PRS and Legal	4+ years	\$
• <i>Solicit community input on changes to current private tree protection policies and community priorities; then match urban forestry program needs to community desires</i>	PRS	1-3 years	\$\$
<i>i. Encourage the protection of trees on private property, consider incentives for private residents to promote tree maintenance</i>	PRS	1-3 years	\$
Collaborate with the Public Works Department to create a sidewalk or hardscape ordinance that meets tree protection and infrastructure goals, cross reference it in 12.44	PRS, PW and Legal	4+ years	\$
Consider codifying a requirement to enhance canopy coverage on new developments (including parking lots), and establish clear, enforceable maintenance requirements that prioritize long-term establishment care and tree performance in Municipal Code Title 16 Subdivisions Chapter 36 Design and Improvement Standards	PRS and Planning	1-3 years	\$

Table 8-1. Action and Implementation Plan for Recommendation 2-1 in Napa's Protect goal.

2-2

Ensure that tree-related policies in any other relevant City documents, such as the Approved Street Tree List, Street Tree Planting Specifications, Tree Preservation Standard, and Tree Removal and Posting Policy, are up to date, aligned with, and referenced in the municipal code and other City planning documents

Action	Depts. Involved	Timeline	Funding
Regularly update the City's approved tree species list "Napa's Master Street Tree List"	PRS	In progress	\$
<ul style="list-style-type: none"> Reference the approved species list in the General Plan 	PRS and Planning	1-3 years	\$
<ul style="list-style-type: none"> Consider changing the name of "Napa's Master Street Tree List" to the "City's Approved Tree List", which is how the list is referred to in the Tree Removal and Replacement Policy 	PRS	In progress	\$
Update the Street Tree Planting Specifications and Root Guard Barrier Specifications in the engineering standards (update the planting depth, placement of watering pipes and explain the implications of root guards to trees respectively), model the code after the updated versions	PRS and Public Works	1-3 years	\$
Review and update the Tree Removal and Posting Policy	PRS	In progress	\$
<ul style="list-style-type: none"> Review the standardized set of criteria for tree removals, include metrics for equity such as canopy cover and neighborhood density 	PRS and Planning	1-3 years	\$
<ul style="list-style-type: none"> Define and require stump removal and a plan for compensatory planting (replacement trees or in lieu of fees) 	PRS	1-3 years	\$
<ul style="list-style-type: none"> Update the Phased Removal Plan in the Tree Removal and Posting Policy to allow Director discretion and refer to the compensatory planting guidelines. 	PRS	1-3 years	\$
<ul style="list-style-type: none"> Update references to the Tree Protection Code in the Zoning Ordinance (17.52), and continue to reference documents and codes where appropriate. 	PRS and Planning	1-3 years	\$
Update the Preservation Standard to include tree protection during construction, with a diagram of tree protection zones	PRS and Public Works	In progress	\$
<ul style="list-style-type: none"> Remove the requirement for fertilization as a part of post-construction care practices given that it initiates growth rather than defense response in trees and unintended consequences. 	PRS	In progress	\$

Table 8-2. Action and Implementation Plan for Recommendation 2-2 in Napa's Protect goal.

2-3

Develop new standards and educational materials to address issues affecting Napa's urban forest that are not included in current city code or policies

Action	Depts. Involved	Timeline	Funding
Develop a comprehensive tree manual for staff, contractors, and community members to standardize practices and promote maintenance, tree protection based on the tree ordinance and industry standards	PRS	In progress	\$
<ul style="list-style-type: none"> Focus Private Tree Protection and Preservation Recommendations on 'Preservation through Education' (e.g. City of Brookings Urban Forest Initiative) 	PRS	In progress	\$
<ul style="list-style-type: none"> Include accessible summaries for content that can be used as outreach materials on the benefits of trees, the tree removal process, tree mitigation, tree protection during construction 	PRS	In progress	\$
Integrate trees and planter designs during the development of a City-wide Storm Water Management Plan	PRS and Public Works	4+ years	\$\$
Require quality nursery stock selection, in accordance with ANSI Standards	PRS and Planning	1-3 years	\$
Develop an internal Tree Removal and Preservation Decision Guide to clarify thresholds and reduce subjectivity	PRS	In progress	\$
Develop standards and policies for naturally-maintained areas	PRS	1-3 years	\$\$
<ul style="list-style-type: none"> Consider additional aspects of management in natural areas, such as managing for wildfire risk reduction, canopy connectivity, water quality, or other activities that promote natural areas as habitat for birds and other wildlife 	PRS	1-3 years	\$\$
<ul style="list-style-type: none"> Include policies regarding urban forestry goals for public natural areas and park space 	PRS and Planning	4+ years	\$\$\$
Prevent the movement of felled tree materials where possible that may be harboring pests or pathogens such as untreated logs, firewood, and woodchips	PRS	In progress	\$

Table 8-3. Action and Implementation Plan for Recommendation 2-3 in Napa's Protect goal.



ACTION SPOTLIGHT: POLICIES AND GUIDING DOCUMENTS

Establishing and enforcing clear guidelines on which trees may or may not be planted in different types of locations within Napa is the best way to plan for a healthy and sustainable urban forest in the future. **Napa's Species List** includes information on the trees' characteristics and form, water needs, growth rates, predicted size at maturity, recommended grow space, potential to conflict with hardscapes and utilities, susceptibility to pests, and suitability for various uses such as street trees, so that anyone planting trees can be confident they are putting the **"right tree in the right place."** The Species List should be continuously reevaluated and updated as the successes and challenges of planting various species are observed to ensure that the most up-to-date information available is referenced.

Equally as important as guidance for tree planting is providing clear regulations on how and when trees may be removed. By reviewing and updating its **Tree Removal and Posting Policy**, Napa can establish and enforce consistent, equitable, and science-based rules governing the removal and replacement of nuisance or hazardous trees.



Proposed landscape designs from the General Plan's Land Use and Community Design Element.



PROMOTE

Vision

Each community member can play a role in sustaining a healthy urban forest. Public education and an increased community awareness of the value of trees remains a primary focus. A significant percentage of Napa's tree canopy is on private property. To build further capacity on private property, and position Napa to enhance its tree canopy, increased community engagement, public education initiatives, and programs aimed to incentivize and encourage private planting will be integrated.

Description

The majority of Napa's urban tree canopy, in terms of both acreage and percent cover, is located within residential-zoned areas, which also occupy the largest portion of Napa's total city area. Therefore, efforts to both preserve existing tree canopy and expand canopy with new plantings will need to be focused on sharing critical information with homeowners, developers, and other land managers in these areas. By expanding public outreach efforts with a focus on the value of trees, their life cycles and maintenance needs, and best management practices for caring for them, Napa can help ensure that residents are equipped to help sustain their community's urban tree canopy into the future. The City can further encourage support from the community by involving residents in important decisions, such as those pertaining to tree and infrastructure conflicts and tree preservation standards. Additionally, by forming strategic partnerships with residents and relevant groups, the City can recruit potential volunteers, sources of funding, and a variety of other benefits that result from collaboration.

Themes

- Value of Urban Trees and Canopy
- Species and Site Selection
- Targeted Tree Planting
- Need for More Education
- Barriers to Planting Trees on Private Property

3-1

Communicate important information about the benefits and maintenance needs of Napa's community trees to the general public, private property owners, potential partners, funders, and decisionmakers

Action	Depts. Involved	Timeline	Funding
Educate community members about the benefits of Napa's trees using positive messaging that brings the community together to see trees as key infrastructure and assets to Napa	PRS	In progress	\$
• Utilize the data on the community tree inventory and urban forest canopy cover to communicate community tree and urban forest benefits (annual stormwater, air quality, and carbon sequestration) & replacement values	PRS	In progress	\$
• Create educational materials for large and institutional landowners to highlight the vital importance to care for these patches of land and convey that tree canopy cover in these areas helps the land and the City as a whole	PRS	1-3 years	\$\$
• Build upon the public-facing digital resource hub: policies, standards tree FAQs, justifications, and engagement materials	PRS	In progress	\$
Promote and/or incentivize tree planting on private property, particularly in low canopy and other high priority planting areas	PRS	In progress	\$\$
• Encourage tree planting and preservation on private property, which makes up 68.9% of land in Napa, through education and engagement and subsidized planting programs	PRS	In progress	\$
• Provide incentives for planting climate-ready trees	PRS	1-3 years	\$
Provide educational resources to property owners about best management practices for tree selection, planting, establishment care, the need for ongoing maintenance, and tree preservation during development	PRS	In progress	\$
• Develop materials that explain ownership and data, FAQs on property owner and city responsibilities for street trees, codes and permit requirements	PRS	1-3 years	\$
i. Create a responsibility chart distinguishing between public and private obligations for public trees and private trees	PRS	1-3 years	\$
• Develop materials that explain the lifecycle and full cost of street trees, shared responsibilities, and replacement rationale	PRS	1-3 years	\$
i. Craft messaging to frame removal and replacement as part of a healthy, managed forest	PRS	In progress	\$
i. Utilize the inventory of street trees to communicate trees' maintenance needs to adjacent property owners	PRS	In progress	\$
Host educational days for residents with demonstrations on tree planting and establishment practices such as slow watering, proper planting techniques, and mulching	PRS	In progress	\$
Create educational handouts or a manual for residents that describes the importance of tree preservation during development (BMPs, how to set up a TPZ, etc.)	PRS	1-3 years	\$\$
Develop materials that define tree establishment regulations and guidelines in City code, include outreach protocols	PRS and Legal	4+ years	\$

Table 9-1. Action and Implementation Plan for Recommendation 3-1 in Napa's Promote goal.

3-2

Engage community members in the decisionmaking process around current and future tree management and planting to encourage community buy-in and support

Action	Depts. Involved	Timeline	Funding
Continue to engage residents to determine preferences for tree and infrastructure conflict mitigation, including phased or complete tree removals and repairs, alternative designs, and planter modifications	PRS and Public Works	In progress	\$
<ul style="list-style-type: none"> Continue to engage neighborhoods by setting up community tables to discuss tree, park, and sidewalk integration to then incorporate their desires into neighborhood specific plans for tree/infrastructure conflict mitigation 	PRS and Public Works	In progress	\$
Promote education and outreach as a key component when seeking community input on potential changes to Municipal Code (e.g., private tree protections 12.45), including what the current regulations are and how the ordinance could be updated, and community priorities	PRS	1-3 years	\$\$

Table 9-2. Action and Implementation Plan for Recommendation 3-2 in Napa's Promote goal.

3-3

Strengthen and develop partnerships with residents, nonprofit groups, organizations, private sector companies, developers, potential funders, and similar communities to share knowledge and resources and work together to promote Napa's trees

Action	Depts. Involved	Timeline	Funding
Nonprofits and community groups: (1) Collaborate with organizations that have a structured volunteer program with clearly defined roles and safe activities that can educate the volunteers and (2) Encourage the development of an urban forestry-related non-profit	PRS	1-3 years	\$
Other environmental organizations: Collaborate with climate groups to include trees into their messaging	PRS	In progress	\$
Private sector, developers, & potential funders: Explore strategic and corporate partnerships	PRS	1-3 years	\$
<ul style="list-style-type: none"> Define and move towards accomplishing shared broad urban forestry goals 	PRS	4+ years	\$\$\$
<ul style="list-style-type: none"> Seek both long and short term resource sharing or funding partnerships to help fund urban forestry events/projects 	PRS	1-3 years	\$\$
<ul style="list-style-type: none"> Explore opportunities for green waste management and market opportunities for wood products 	PRS	1-3 years	\$
Other cities with similar needs/goals/etc. or in the broader region: (1) Join or create regional partnerships and start an avenue of collaborative data sharing to better impact the Urban Forest and community members in the most efficient way possible and (2)	PRS	4+ years	\$\$
<ul style="list-style-type: none"> Collaborate with the City of Davis and other leaders in climate adapted species selection to incorporate additional climate ready species 	PRS	1-3 years	\$

Table 9-3. Action and Implementation Plan for Recommendation 3-3 in Napa's Promote goal.



ACTION SPOTLIGHT:

Right Tree Right Place Tree Planting Guide

Importance of Planting Trees

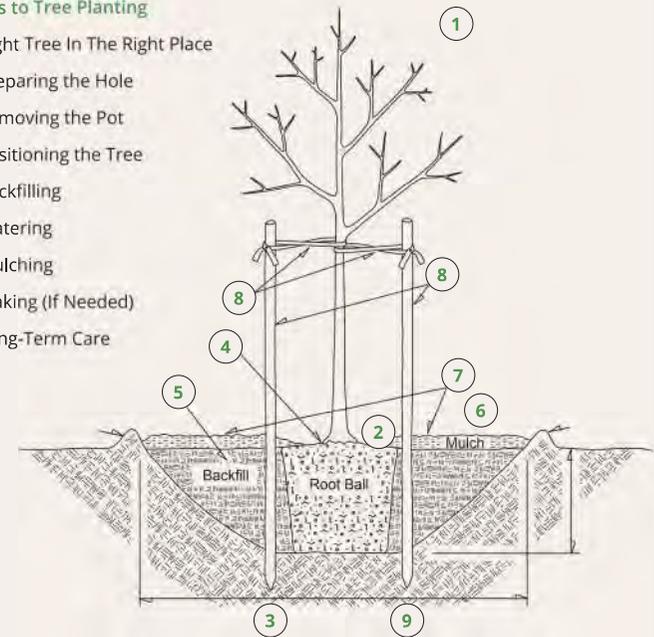
Planting a tree is more than just adding greenery—it's an investment in cleaner air, cooler streets, and a healthier environment.

Right Tree Right Place

The phrase “right tree right place” means choosing a tree species that is well suited to its planting location. It is important to consider matching the tree species to an appropriate planting site.

Steps to Tree Planting

1. Right Tree In The Right Place
2. Preparing the Hole
3. Removing the Pot
4. Positioning the Tree
5. Backfilling
6. Watering
7. Mulching
8. Staking (If Needed)
9. Long-Term Care





PLAN

Vision

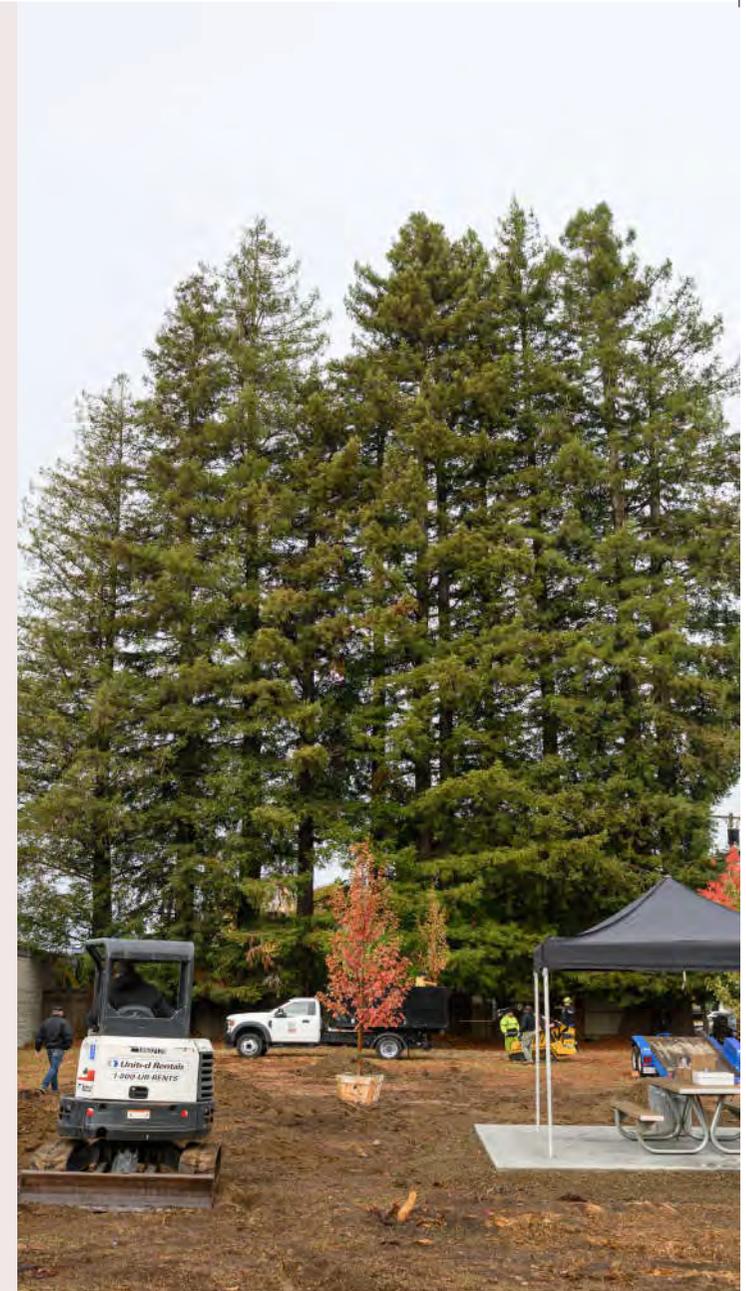
Proactive planning for the maintenance and care of trees is essential to maintaining a healthy urban forest. Through the utilization of tree inventory management software, data related to the urban forest can be properly managed through tracking and planning efforts. To maximize the benefit to the community, prioritized planting efforts in areas with the lowest canopy levels and highest heat exposure will ensure the benefits of trees are shared equitably across the community. *Expanding tree care initiatives will require cost effective strategies and increased resources.*

Description

One of the most significant outcomes that the City hopes to achieve through the adoption and implementation of this Plan is shifting from a reactive to proactive maintenance cycle. Accomplishing this will require that the City has a functional and effective urban forestry program, equipped with adequate staffing and resources, and is able to collaborate effectively with other City departments about important issues concerning the community's trees. Another primary theme of the Plan is managing existing tree and infrastructure conflicts (e.g. sidewalks) and preventing future conflicts from occurring. In Napa, 10.3% of tree sites were adjacent to damaged sidewalks; 2.2% were adjacent to damaged curbs; and 5.1% had both curb and sidewalk damage. By working together with other City departments and residents to proactively remove trees that are located in unsuitable planter strips and plant more appropriate trees for the sites available in the future, the City can reduce those numbers and minimize future issues. Finally, a third key objective of the Plan is to maintain the City's existing citywide canopy cover while equitably expanding canopy in areas with the greatest need. Through the efforts of this planning process, Napa now has data to create a robust planting plan, identify priority planting areas, and focus on new species to increase diversity across the City. As the community works towards accomplishing those three overarching goals and all other goals established in this Plan, they can utilize these recommendations and action items to quantitatively track and measure progress. Although this Plan represents one snapshot in time, it can and should be revisited and updated regularly to assess progress towards meeting the goals herein and adapt management approaches as needed. from collaboration.

Themes

- Tree and Infrastructure Conflicts
- Water Resilience
- Tree Preservation vs. Removal and Replacement Amidst Development Pressures
- Targeted Tree Planting
- Need for Increased Funding, Staffing Capacity, and Maintenance
- Need for More Data Tracking
- Need for Code and Policy Review and Enforcement
- Barriers to Maintaining Trees on Public Property



4-1 Develop a functional and sustainable urban forestry management program with adequate staffing, resources, and support from other City partners

Action	Depts. Involved	Timeline	Funding
Develop partnerships and increase collaboration between the Parks and Trees division, other City of Napa departments, local decisionmakers, & utilities	PRS	In progress	\$
<ul style="list-style-type: none"> Expand interdepartmental communication, improve communication protocols, and increase cross-training between Parks, Public Works, Fire Department, and other relevant units to create safe and proactive management system with clear standards across departments 	PRS and Public Works	1-3 years	\$
<ul style="list-style-type: none"> Further integrate trees into Capital Improvement Projects and across departments <ul style="list-style-type: none"> i. Apply the tree removal criteria and processes from the Tree Removal and Posting Policy to streamline internal infrastructure-related tree work i. Clarify tree protection and removal/replacement roles (tree placement, species selection, TPZ, templates, etc.) i. Create a check box on CIP to confirm that Parks has reviewed the design 	PRS and Public Works	In progress	\$
Align tree related goals with other citywide planning initiatives	PRS and Planning	1-3 years	\$\$
<ul style="list-style-type: none"> Formally adopt the view that trees are critical infrastructure; integrate this principle into plans, code, and infrastructure policy 	PRS, PW and Planning	1-3 years	\$
<ul style="list-style-type: none"> Integrate trees and urban forestry planning in the City's General Plan Parks chapter (4) to define them as park infrastructure and establish canopy cover goals for parks <ul style="list-style-type: none"> i. Utilize trees to meet the General Plan's equity & public health goals by equitably planting trees in areas with the highest need and least canopy cover i. Utilize the climate vulnerability analysis of the regional climate (e.g., temperature and rainfall), physical factors (e.g., amount of impervious surfaces) and social factors (e.g., age and income) to identify areas in the community where populations are most vulnerable to the impacts of climate change and wildfire risk 	PRS and Planning	1-3 years	\$\$
<ul style="list-style-type: none"> Integrate trees and urban forestry planning into the City's Climate Action Plan and align goals with the Urban Forestry Management Plan <ul style="list-style-type: none"> i. Utilize tree planting and preservation as a strategy to meet the City's carbon net zero by 2030 goal 	PRS and Planning	1-3 years	\$\$
<ul style="list-style-type: none"> Coordinate urban forestry efforts with stormwater and watershed plans, including inventory goals and tree tracking in these areas <ul style="list-style-type: none"> i. Expand and preserve canopy cover in watershed areas and along the river buffer to promote canopy connectivity/wildlife corridors, erosion control, stormwater and flood mitigation, and increase the amount of ecosystem benefits the community receives. 	PRS and Public Works	In progress	\$
	PRS	1-3 years	\$\$
	PRS	4+ years	\$\$

Table 10-1. Action and Implementation Plan for Recommendation 4-1 in Napa's Plan goal.

4-2

Manage existing tree and infrastructure conflicts in Napa's urban forest and prevent future tree and infrastructure conflicts

Action	Depts. Involved	Timeline	Funding
Proactively use the criteria set forth in the Tree Removal and Posting Policy to address tree and infrastructure conflicts	PRS and Public Works	In progress	\$\$
<ul style="list-style-type: none"> Continue to engage in tabling events with neighborhoods to find creative ways to mitigate tree and hardscape conflicts and use the input to develop neighborhood-specific plans 	PRS and Public Works	In progress	\$
Implement alternative planting techniques such as structural soils, suspended pavements, and permeable pavements that reduce infrastructure conflicts and benefit the tree	PRS and Public Works	1-3 years	\$\$
When planting new trees, select trees specifically for the space available, taking factors such as planter conditions (e.g. well size, existing infrastructure, exposure, soil type, climate), proximity to underground utilities and electrical transmission lines, soil volume availability, the quality of uncompacted soil available to the tree, and species characteristics (e.g. size at maturity, growth habit, drought tolerance, rooting habits) into consideration	PRS	In progress	\$
<ul style="list-style-type: none"> Maintain and improve tiered species lists matched to space constraints 	PRS	In progress	\$
<ul style="list-style-type: none"> Develop comprehensive planting plans to help minimize negative hardscape interactions while maintaining city-wide tree canopy cover <ul style="list-style-type: none"> Trees should be selected specifically for the space available with characteristics favorable to an urban environment 	PRS and Public Works	1-3 years	\$\$
<ul style="list-style-type: none"> Continue to consider minimum planter space for street trees and in development and redevelopment projects to avoid conflicts with hardscape and accessibility in the future <ul style="list-style-type: none"> Expand planting considerations to include soil volumes (as opposed to size of planting space); ensure increased soil volume is available in areas where large statured trees are desired 	PRS, PW and Planning	4+ years	\$\$
Explore potential changes to development patterns and practices that better incorporate trees	PRS and Planning	4+ years	\$\$
<ul style="list-style-type: none"> Consider removing some off-street parking to create bike and walking areas for active transportation including planter strip buffers 	PRS and Public Works	4+ years	\$\$\$
<ul style="list-style-type: none"> Consider removing the planter strip and planting trees behind the sidewalk (i.e., sidewalk would be adjacent to the curb and gutter) 	PRS and Public Works	In progress	\$\$\$

Table 10-2. Action and Implementation Plan for Recommendation 4-2 in Napa's Plan goal.

4-3

Plant, replace, and preserve trees at strategic levels and locations around the City to align with Napa's canopy goals, achieve an equitable distribution of tree canopy, and ensure consistent canopy coverage as older trees reach the end of their useful life

Action	Depts. Involved	Timeline	Funding
Align new and replacement tree planting levels with the City's desired goal to maintain citywide canopy cover and meet the "no net loss" policy	PRS, PW and Planning	4+ years	\$\$\$
<ul style="list-style-type: none"> Utilize the data from the Canopy Assessment to set a canopy goal(s) based on current land cover distribution, land use classifications (such as zoning), community values, and vision 	PRS and Planning	4+ years	\$\$
Focus new and replacement tree plantings and tree preservation efforts in high-priority areas that provide the greatest value and/or have the greatest need	PRS	4+ years	\$\$\$
<ul style="list-style-type: none"> Use the City's tree canopy and land cover analyses to develop planting plans that increase trees and canopy in areas that will allow for the greatest impact and return on investment 	PRS and Public Works	4+ years	\$\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Use the priority planting analysis and Land Surface Temperature map to strategically plant and preserve trees in the hottest parts of the community (northern and western parts of the community) to help cool land surface and ambient temperatures and reduce heat islands 	PRS and Public Works	4+ years	\$\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Use the Canopy Change maps to identify Block Groups that are losing canopy cover and/or increasing in impervious surfaces and focus planting and preservation efforts in those areas 	PRS and Public Works	4+ years	\$\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Utilize the climate vulnerability analysis to strive for a more balanced and equitable urban forest by targeting new tree plantings in areas identified as having lower than average canopy cover and vulnerable populations to the impacts of climate change and wildfire risk 	PRS	4+ years	\$\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Focus corresponding community outreach efforts and tree planting opportunities in areas with the least canopy cover and least access to greenspaces 	PRS	1-3 years	\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Establish long-term targets for mitigating the impact of climate change 	PRS and Planning	4+ years	\$\$
<ul style="list-style-type: none"> <ul style="list-style-type: none"> Identify areas where resilience can be increased or supported (e.g., block groups with greater wildfire risk in the east and west edges, climate vulnerability in the north and central, and social equity in the central and south parts of Napa) 	PRS and Planning	4+ years	\$\$

Table 10-3. Action and Implementation Plan for Recommendation 4-3 in Napa's Plan goal.

4-4

Develop and implement standardized data tracking processes for the City's tree inventory, canopy, and Urban Forestry Management Plan goals and action items

Action	Depts. Involved	Timeline	Funding
Regularly update resources over time to see how the City is changing and if the program is on track to meet urban forestry goals	PRS	Inprogress	\$
<ul style="list-style-type: none"> Maintain and update the inventory database to track all community trees, including their growth and condition, as well as include new tree plantings, removals, and available planting sites in the built areas of the community 	PRS	4+ years	\$\$\$
<ul style="list-style-type: none"> Consider helping managing partners in urban forest maintenance and planning by adding trees outside of the cities jurisdiction to TreeKeeper (e.g., Vine Trail, county natural areas) 	PRS	4+ years	\$
<ul style="list-style-type: none"> Continue to update the City's Canopy Assessment at regular intervals to track how canopy is changing across the city over time, monitor areas of canopy expansion and loss, and determine whether the community is on track to meet its "no net loss" canopy goal 	PRS	4+ years	\$\$\$
<ul style="list-style-type: none"> Consider requiring mapping of during the development review process to locate trees and support tracking and compliance efforts 	PRS and Planning	4+ years	\$\$
<ul style="list-style-type: none"> Explore how to calculate canopy cover on developable parcels and identify high-risk parcels for targeted protection 	PRS and Planning	4+ years	\$\$
<ul style="list-style-type: none"> Utilize the Urban Forestry Management Plan and associated project deliverables in citywide and urban forestry planning efforts. Continue to refer to and update them over time 	PRS	Inprogress	\$
<ul style="list-style-type: none"> Include quantitative metrics and thresholds in UFMP and policy materials 	PRS	Inprogress	\$
<ul style="list-style-type: none"> Consider the UFMP as a living document that continuously adapts to better serve the community as well as the urban forest long into the future 	PRS	4+ years	\$\$
<ul style="list-style-type: none"> Continue using the data provided in this plan as it relates to urban forest resiliency; update data based on routine monitoring and observed trends 	PRS	4+ years	\$\$

Table 10-4. Action and Implementation Plan for Recommendation 4-4 in Napa's Plan goal.



**ACTION SPOTLIGHT:
PLANNING FOR FUTURE
GENERATIONS**

Napa has already established goals to reduce its greenhouse gas emissions and reduce climate pollutants from public and private operations within the City. Since trees sequester and store carbon, planting and preserving trees can be a valuable tool in the City's climate toolkit as they work towards their goals. Potential strategies include City Forest Credits for preserving existing tree canopy (City Forest Credit, 2025), utilizing the carbon benefit values quantified within Napa as a result of the Resource Analysis and Land Cover Assessment, and tree planting incentives for establishing new canopy, such as those described above in the "Promote" highlight. Aligning the goals of the forestry program with Citywide climate goals and using tree planting and preservation as strategies to meet the City's climate action goals set forth in the Climate Action Plan can help Napa to streamline its efforts, ensure consistency across departments and programs, and maximize its impact to both the urban forest and climate.



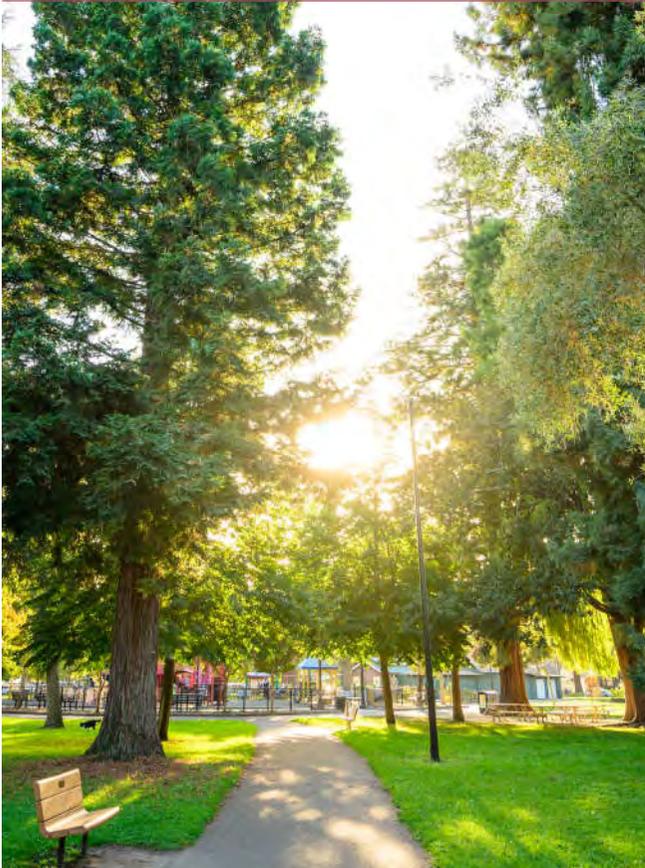


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“We have an obligation to young people and future generations to restore a safe climate. Business-as-usual actions [...] need to be called out. Urban forests, like other land cover types and land uses, are critical in achieving net zero and net negative CO₂ emissions, and should be managed accordingly.”

— Community Survey Respondent

SECTION 4: HOW ARE WE DOING?



MEASURING PROGRESS

The Napa Urban Forestry Management Plan is intended to be a living document that will continuously evolve. To serve as an effective tool in fostering a sustainable and resilient urban forest in Napa, both the ongoing implementation of the plan and the state of Napa's urban forest require regular monitoring and assessment. Periodic evaluations will help to pinpoint successes in the urban forestry plan that can be used in building momentum around trees and also identify emerging opportunities and challenges that may necessitate incorporation into the Plan. This proactive approach ensures the plan's adaptability and relevance over time.

Periodic Review and Updates of the Plan

As a living document, the Plan is designed to be periodically reviewed and updated every 3-5 years based on the changing needs of Napa's trees, community priorities, new opportunities, and successes in the Plan's implementation. The data and information from the other tools to measure progress, detailed below, are essential for conducting the review and updating the Plan.

Tree Inventory Updates

A public tree inventory provides critical information to manage and maintain Napa's public tree resource and provides an opportunity to monitor the resource over time. Urban forestry industry standards recommend that municipal tree inventories are updated on a regular basis, as planting, maintenance, and removals occur and fully re-inventoried at least once every 7-10 years. As Napa's public trees are inventoried and re-inventoried, the City can monitor changes in:

- Tree genus and species composition
- Number and location of trees
- Size/age composition
- Condition
- Maintenance needs

Assessing these changes can help measure progress in implementing the Plan's recommendations.

Changes in Tree Benefits

As discussed in Section 1, Napa's trees provide quantifiable benefits to the community. Measuring Napa's progress in growing and caring for its urban forest can be done by examining changes in these tree benefits. Did the amount of air pollutants removed increase or decrease over time? Does the canopy intercept more gallons of stormwater? Has the amount of carbon stored increased? i-Tree, the USDA Forest Service's suite of tools that measures and quantifies the benefits of trees, can be used to measure changes in tree benefits over time. The software tools in i-Tree are routinely updated based on the latest science and research. (Note: To most accurately compare changes in benefits over time, both the new and previous canopy assessment data must be analyzed through the same version of i-Tree.)

Indicators of a Sustainable Urban Forest

The Indicators of a Sustainable Urban Forest were used to establish a baseline assessment of Napa's urban forest broadly categorized into three groups: The Trees, The Players, and **The Management Approach**.

As the Plan is implemented, periodic reassessments (every 3-5 years) of the Indicators of a Sustainable Urban Forest should be conducted. The reassessments can highlight successes in implementation, identify areas for improvement, and establish new program priorities, recommendations, and action steps that can be used in Plan updates.

CONCLUSION

The Urban Forestry Management Plan underscores the vital role of trees in enhancing the quality of life, resilience, and sustainability of Napa. To maximize their benefits now and preserve them for the future, four main recommendations are provided to help guide Napa in achieving each of the Parks and Recreation Department's identified goals to (1) Preserve, (2) Protect, (3) Promote, and (4) Plan for the City's trees and the future of Napa's urban forest. For each goal, a vision statement and brief description of current conditions and needs are provided, as well as 15 recommendations in total to help the City achieve their goals.

Overall, the Plan emphasizes the importance of proactive management of public trees, and action by private landowners and residents to promote and maintain tree canopy. This is based on major findings related to the percentage of land types, with 76.4% of land in Napa being privately-owned, and the high percentage – i.e. 91.7% – of community tree planting sites already full. Of similar importance, the Plan identified various benchmarks to advise the City's current resource effort, finding that when evaluated by the number of public trees, Napa's \$38.93 per-tree expenditure is less than the national, regional, and 50-99k population group averages by a factor of 1.2-1.3x.

Key recommendations to help address challenges and increase planting opportunities include:

- Provide ongoing, proactive maintenance to trees throughout all stages of their life cycles to maximize chance of successful establishment and optimize tree health, growth, and community benefits;
- Preserve large, healthy, mature trees whenever possible to maximize and sustain community benefits;

- Identify gaps in existing tree planting, maintenance, and preservation standards in the City's municipal code;
- Develop new standards and educational materials to address issues affecting Napa's urban forest that are not included in current city code or policies;
- Strengthen and develop partnerships with residents, nonprofit groups, organizations, private sector companies, developers, potential funders, and similar communities to share knowledge and resources and work together to promote Napa's trees;
- Manage existing tree and infrastructure conflicts in Napa's urban forest and prevent future tree and infrastructure conflicts; and
- Plant, replace, and preserve trees at strategic levels and locations around the City to align with Napa's canopy goals, achieve an equitable distribution of tree canopy, and ensure consistent canopy coverage as older trees reach the end of their useful life.

Napa residents value and appreciate their urban trees particularly due to the benefits they provide including shade, reducing urban heat islands, sequestering carbon, and providing habitat for wildlife. A partnership of City administration, residents, and businesses can stop tree canopy loss by stewarding trees in the spaces where people live, work, and play. Residents and other private stakeholders can do their part by supporting local tree efforts and by planting and preserving trees on private property. Together, the community can cultivate an abundant, healthy, sustainable, and resilient urban forest in Napa.



APPENDICES

A. REFERENCES

- AECOM. 2013. Financing San Francisco's Urban Forest. San Francisco, CA. https://default.sfplanning.org/plans-and-programs/planning-for-the-city/urban-forest-plan/UFP_Financing_Study_Exec_Sum_131216.pdf
- Akbari, H., D. Kurn, et al 1997. Peak power and cooling energy savings of shade trees. *Energy and Buildings* 25:139-148.
- American Forests. 2025. Tree Equity Score. Retrieved from <https://www.treeequityscore.org/insights/place/napa-ca>
- American Planning Association. 2003. Planning the Urban Forest: Ecology, Economy, and Community Development. 2009. American Planning Association. Edited by Schwab, James.
- Baudry, J., Bunce, R. G. H., and Burel, F. 2000. Hedgerows: an international perspective on their origin, function and management. *Journal of Environmental Management*, 60(1), 7-22.
- Browning, D. M. and Wiant, H. V. 1997. The Economic Impacts of Deferring Electric Utility Tree Maintenance. *Arboriculture & Urban Forestry* 3: 106-112; DOI: <https://doi.org/10.48044/jauf.1997.017>
- Bunge, A., Diemont, S., Bunge, J., Harris, S.. Urban foraging for food security and sovereignty: quantifying edible forest yield in Syracuse, New York using four common fruit- and nut-producing street tree species, *Journal of Urban Ecology*, Volume 5, Issue 1, 2019, juy028, <https://doi.org/10.1093/jue/juy028>
- Cascadia Consulting Group. 2001. Seattle Urban Forest Assessment: Sustainability Matrix. Appendix I, Matrix Summary Detail, p. I-8.
- City Forest Credits. 2025. Carbon Credits for City Trees. Retrieved from <https://www.cityforestcredits.org/>
- City of Napa. n.d. Climate Action. Climate Emergency Resolution. Retrieved from <https://www.cityofnapa.org/1298/Climate-Action>
- City of Napa Community Tree Resource Analysis. 2024.
- City of Napa General Plan. Adopted 2022. Retrieved from <https://www.cityofnapa.org/259/General-Plan>
- City of Napa Operating & Capital Budget Fiscal Years 2023/24 and 2024/25, 2023. Retrieved from <https://www.cityofnapa.org/ArchiveCenter/ViewFile/Item/217>
- City of Napa Parks Infrastructure Program. 2023. Parks Condition Assessment and Program Recommendations. Retrieved from <https://www.cityofnapa.org/DocumentCenter/View/12033/Park-Infrastructure-Program-2023>
- City of Napa Public Works Operations. 2020. Fiscal year 2019 • 2020 Concrete Repairs. <https://www.cityofnapa.org/DocumentCenter/View/10015/Concrete-Work-2019-2020-PDF>
- City of Napa Tree Canopy and Land Cover Assessment. 2024.
- Clark, J.R., Matheny, N.P., Cross, G., Wake, V. 1997. A Model of Urban Forest Sustainability. *J Arbor* 23(1):17-30.
- Currie, J., Neidell, M., and Schmieder, J.F. 2009. Air pollution and infant health: Lessons from New Jersey. *Journal of Health Economics*, 28(3), 688-703.
- Dwyer, J.F, McPherson, E.G., Schroeder, H.W., and Rowntree, R.A. 1992. Assessing the Benefits and Costs of the Urban Forest. *Journal of Arboriculture* 18(5): 227-234.
- Ellison, D., Morris, C.E., Locatelli, B., Sheil, D., Cohen, J., Murdiyarso, D., Gutierrez, V., Van Noordwijk, M., Creed, I.F., Pokorny, J. and Gaveau, D., 2017. Trees, forests, and water: Cool insights for a hot world. *Global Environmental Change*, 43: 51-61.
- Fernández-Juricic, E. 2001. Avifaunal use of wooded streets in an urban landscape. *Conservation Biology*. 14(2): 513-521.
- Garvey, S. M., Templer, P. H., Pierce, E. A., Reinmann, A. B., and Hutya, L. R. (2022). Diverging patterns at the forest edge: Soil respiration dynamics of fragmented forests in urban and rural areas. *Global Change Biology*, 28(9), 3094-3109.
- Giacinto, J.J., Fricker, G. A., Ritter, M., Yost, J., and Doremus, J. 2021. Urban forest biodiversity and cardiovascular disease: Potential health benefits from California's street trees. *PLOS one*, 16(11), e0254973.
- Gilstad-Hayden, K., Wallace, L.R., Carroll-Scott, A., Meyer, S.R., Barbo, S., Murphy-Dunning, C., and Ickovics, J.R. 2015. Research note: Greater tree canopy cover is associated with lower rates of both violent and property crime in New Haven, CT. *Landscape and Urban Planning*, 143, 248-253.
- Hauer, R. J., Timilsina, N., Vogt, J., Fischer, B. C., Wirtz, Z., and Peterson, W. (2018). A volunteer and partnership baseline for municipal forestry activity in the United States. *Arboriculture and Urban Forestry (AUF)*, 44(2), 87-100.
- Hodges and Brandle 1996 <https://reason.org/policy-study/26th-annual-highway-report/maintenance-disbursements-per-mile/>. Accessed June 21, 2024
- Jennings, V.; Gaither, C.J. 2015. Approaching Environmental Health Disparities and Green Spaces: An Ecosystem Services Perspective. *Int. J. Environ. Res. Public Health*. 12, 1952-1968.
- Jones, B. A., and Goodkind, A. L. 2019. Urban afforestation and infant health: Evidence from MillionTreesNYC. *Journal of Environmental Economics and Management*, 95, 26-44.
- Karl, Tom, P. Harley, L. Emmons, B. Thornton, A. Guenther, C. Basu, A. Turnipseed, K. Jardine. Efficient Atmospheric Cleansing of Oxidized Organic Trace Gases by Vegetation. October 2010. <https://www.sciencemag.org/cgi/content/abstract/330/6005/816>
- Kenney, Alex W., van Wassenae, P.J.E., and SateI, A.L., 2011. Criteria and Indicators for Strategic Urban Forest Planning and Management. *Arboriculture and Urban Forestry* 2011. 37(3): 108-117

Kooch, Y., Tavakoli, M., and Akbarinia, M. (2018). Tree species could have substantial consequences on topsoil fauna: a feedback of land degradation/restoration. *European Journal of Forest Research*, 137(6), 793-805.

Kuo, F.E. and Sullivan, W.C., 2001. Environment and crime in the inner city: Does vegetation reduce crime? *Environment and Behavior*, 33(3), pp.343-367.

Li, D., Chiang, Y. C., Sang, H., and Sullivan, W. C. 2019. Beyond the school grounds: Links between density of tree cover in school surroundings and high school academic performance. *Urban Forestry and Urban Greening*, 38, 42-53.

Li, D.; Sullivan, W.C. 2016. "Impact of views to school landscapes on recovery from stress and mental fatigue." *Landscape and Urban Planning*, 148:149-158.

Matsuoka, R. 2010. Student performance and high school landscapes: Examining the links. *Landscape and Urban Planning*, 97. 273-282.

McDonald et al 2016. Planting Healthy Air: A global analysis of the role of urban trees in addressing particulate matter pollution and extreme heat. The Nature Conservancy. Retrieved from https://thought-leadership-production.s3.amazonaws.com/2016/10/28/17/17/50/0615788b-8eaf-4b4f-a02a8819c68278ef/20160825_PHA_Report_FINAL.pdf

McPherson, E.G., Xiao, X., Maco, S.E., Van Der Zanden, A., Simpson, J.R., Bell, N., Peper, P.J. 2002 Western Washington and Oregon Community Tree Guide: Benefits, Costs and Strategic Planting. Center for Urban Forest Research Pacific Southwest Research Station. https://www.fs.fed.us/psw/topics/urban_forestry/products/5/CUFR_164_Western_WA_OR_Tree_Guide.pdf

McPherson, G. E. and Jules Muchnick. 2021. Effects of Street Tree Shade on Asphalt Concrete Pavement Performance. 2005. *Arboriculture and Urban Forestry (AUF)* November 2005, 31 (6) 303-310.

Morgenroth, J., Nowak, D. J., and Koeser, A. K. (2020). DBH distributions in America's urban forests—an overview of structural diversity. *Forests*, 11(2), 135.

Napa County Historical Society. 2025. Napa's First People. Retrieved from <https://napahistory.org/napas-first-people/>

Napa Sustainability Plan (2012) [https://www.cityofnapa.org/486/Sustainability Operating & Capital Budget Fiscal Years 2020-2021 through 2024/25](https://www.cityofnapa.org/486/Sustainability%20Operating%20&%20Capital%20Budget%20Fiscal%20Years%202020-2021%20through%202024/25)

Nowak, Richards, N.A. 1982/83. Diversity and Stability in a Street Tree Population. *Urban ecology*, 7:159-171.

Ow, L.F., and Ghosh, S. 2017. Urban cities and road traffic noise: Reduction through vegetation. *Applied Acoustics*, 120, 15-20.

Pena, J.CdC, Martello, F., Ribeiro, M.C., Armitage, R.A., Young, R.J., and Rodrigues, M. 2017. Street trees reduce the negative effects of urbanization on birds. *PLOS ONE* 12(3): e0174484.

Reason Foundation. 26th Annual Highway Report: Maintenance Disbursements per Mile. 2021.

Sherer, P.M., 2003. Why America Needs More City Parks and Open Space. San Francisco: The Trust for Public Land. Retrieved from http://www.tpl.org/content_documents/parks_for_people_Jan2004.pdf

Thériault, Marius; Kestens, Yan; and Des Rosiers, François, The Impact of Mature Trees -on House Values and on Residential Location Choices in Quebec City 2002. *International Congress on Environmental Modelling and Software*. 137. <https://scholarsarchive.byu.edu/iemssconference/2002/all/137>

Thompson, E. Herian, M., Rosenbaum, D. 2021. The Economic Footprint and Quality-of-Life Benefits of Urban Forestry in the United States. Prepared for the Arbor Day Foundation. Bureau of Business Research University of Nebraska. Retrieved from: <https://www.arborday.org/urban-forestry-economic/downloads/complete-report-findings.pdf>

Threlfall, C.G., Nicholas S.G. Williams, Amy K. Hahs, Stephen J. Livesley. Approaches to urban vegetation management and the impacts on urban bird and bat assemblages, *Landscape and Urban Planning*, Volume 153, 2016, Pages 28-39.

Tiwary, A., Sinnett, D., Peachey, C., Chalabi, Z., Vardoulakis, S., Fletcher, T., ... and Hutchings, T. R. 2009. An integrated tool to assess the role of new planting in PM₁₀ capture and the human health benefits: A case study in London. *Environmental pollution*, 157(10), 2645-2653.

Troy, Austin; Grove, J. Morgan; O'Neil-Dunne, Jarlath. 2012. The relationship between tree canopy and crime rates across an urban rural gradient in the greater Baltimore region. *Landscape and Urban Planning*. 106: 262-270.

U.S. Bureau of Labor Statistics Inflation Calculator. 2025. Retrieved from https://www.bls.gov/data/inflation_calculator.htm?pubDate=20251015

Ulmer, J. M., Wolf, K. L., Backman, D. R., Tretheway, R. L., Blain, C. J., O'Neil-Dunne, J. P., and Frank, L. D. 2016. Multiple health benefits of urban tree canopy: The mounting evidence for a green prescription. *Health and Place*, 42, 54-62.

Ulrich, R. S. 1984. View through a window may influence recovery from surgery. *Science*, 224(4647), 420-421.

Vogt, J., R.J. Hauer, and B.C. Fischer. 2015. The costs of maintaining and not maintaining the urban forest: A review of the urban forestry and arboriculture literature. *Arboriculture & Urban Forestry* 41: 293-323. <https://auf.isa-arbor.com/content/41/6/293>

Wolf, K. L. 2005. Business district streetscapes, trees, and consumer response. *Journal of Forestry*, 103(8), 396-400.

Wolf, K.L. 2007. City trees and property values. *Arborist News*. 16(4):34-36.

Xiao, Q., McPherson, E.G., Simpson, J.R., Ustin, S.L. 1998. Rainfall Interception by Sacramento's Urban Forest. *Journal of Arboriculture*. 24(4): 235-244.

B. BUDGET BENCHING

Napa Tree and Population Totals			Funding Category							
			Napa, CA		United States		Western Region		50,000-99,999 Population	
#	%		2021-2025 Avg. \$	2025 \$	x Napa	2025 \$	x Napa	2025 \$	x Napa	
Population (2024)	76,921	—	Municipal Budget (Total Expenditures)	\$345,108,250	\$276,645,140	0.8	\$284,199,517	0.8	\$191,759,181	0.6
Street Trees	23,895	70%	Annual Tree Activity Budget	\$1,328,820	\$7.75	0.8	\$932,638	0.7	\$892,846	0.7
Park Trees	10,241	30%	Per Capita Forestry Budget (population 76,921)	\$17.28	\$12.10	0.7	N/A	N/A	\$12.98	0.8
Total Public Trees	34,136	100%								

Table B1. 2024 Population size and number of public trees in Napa, used to calculate per-capita and per-tree benchmarking values in Table 5 and Table B2.

Table B2. Total annual forestry expenditures from the City of Napa (five-year averages from the City budget) compared with the United States, Western Region, and 50-99k Population Group averages, including funding levels and the ratio of the comparison value to Napa. (Source: Hauer and Peterson 2018, where 2016 values were updated to 2025 values using the U.S. Bureau of Labor Statistics Inflation Calculator)

C. ORDINANCE MATRIX

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Credentials			
Requires certified arborist for paid private tree work	N		
Requires certified arborist for paid public tree work	N	12.44.050	Work must conform to standards established by the Department, though code does not specify it be done by a certified arborist
Requires licensing of private tree care firms	N		
Defines official authority for public tree management	Y	12.44.020	The "Department" (defined as the Community Resources Department of the city)

Table C1: Municipal Code Matrix

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Public Tree Management and Protection			
Establishes/Authorizes City Forester to regulate public trees	N	—	—
Establishes/Authorizes City position (e.g. Mayor, City Administrator, DPW Director) to regulate public trees	Y	12.44.030	The "Director" (defined as the Community Resources Department of the city)
Established a community Tree Board or Commission	Y	2.72.010; 12.44.010	Tree Advisory Commission, 2.72.50 defines Commission duties
Defines public trees	Partially	12.44.010	Defines street tree and right-of-way
Requires annual community tree work plans	N	—	—
Identifies formula for determining monetary tree value	Y	12.44.010	Formulas from Council of Tree and Landscape Appraisers are included in the definition of replacement value
Establishes responsibility for public tree maintenance (e.g. City, adjacent property owner)	Y	12.44.050	(A) Street tree management is the duty of property owners, permits are required for pruning; (D) The Department is authorized to prune all street trees or trees on city property
Requires regular public tree maintenance	Partially	12.44.050	Requires property owners provide regular street tree maintenance
Requires particular types of maintenance (e.g., pruning)	Partially	12.44.050	For street trees (A) watering, weed control, removal of tree-well trash, reporting hazards, pruning (with a permit)
Requires adherence to ANSI A300 standards and best management practices	Partially	12.44.050	Pruning to follow specifications of best practices of professional arboriculture
Establishes permit system for work on public trees	Y	12.44.030; 12.44.050	Permit required to plant a street tree, permit required to prune street trees (above and below ground)
Requires payment of fees for the removal of public trees	Y	12.44.030	Permit required to remove a street tree (ROW tree)
Establishes provisions for penalties for non-compliance	Y	12.44.060	Violation chargeable as a misdemeanor/injunctive relief
Restricts tree removal on public property	Y	12.44.040; 12.44.030	Applies to street trees and other trees on city property; city can remove "within a public right-of-way or where necessary for any engineering reason"
Permit or approval required for tree removal, pruning or excavating near public trees	Partially	12.44.040; 12.44.030	(C) "All street trees or trees on city-owned property that are near any excavation or construction shall be adequately protected in accordance with guidelines established by the Department..."; removal is only authorized by permit
Requires protection of public trees during construction, repairs or utility work	Y	12.44.040; 12.44.050	Construction; utility line pruning requires a permit
Prohibits damage to public trees (e.g. attaching ropes, signs, wires, chemicals, storing materials, excavation etc.)	Y	12.36.160; 12.36.180; 12.44.030; 12.44.040	Unlawful to dimb, damage, vandalize or injure any tree on park property; Permit required to plant or injure a street tree (ROW tree); Injury / destruction of trees on city property is prohibited

Table C1: Municipal Code Matrix

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Public Tree Management and Protection			
Establishes provisions for trimming for overhead utility line clearance	Y	12.44.050	City shall continue to coordinate efforts with utility companies around proper pruning practices around overhead utilities.
Restricts burning of solid wood waste	Y	5.60.080	Prohibits burning solid waste/compostables (would include tree material) except by burning inside buildings in stoves for that purpose to the extent permitted under laws of the state
Establishes a wood utilization program	N	—	—
Establishes an insect/disease control strategy	Partially	12.44.050	Department maintenance may include “pest and disease management procedures”
Prohibits tree topping	Y	12.44.050	Exemptions require approval
Regulates abatement of hazardous or nuisance trees on private property	Y	8.24.010; 12.44.080; 12.45.120	Definition; City may serve notice to any person in violation; notice and if action is not taken city can perform work and bill property owner
Regulates removal of dead or diseased trees	Y	8.24.010; 12.44.010; 12.44.030; 12.44.050	Owner, occupant, agent or person having charge of any property has a duty to remove public nuisance trees, including dead or dying trees; allows the City to prune and remove hazardous trees on city property; including street trees

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Tree Planting			
Regulates tree species which may or may not be planted on private property (approved tree list)	N	—	—
Requires tree planting around and within parking lots	N	—	—
Requires replacement of removed publicly owned trees	Partially	12.44.030	Replanting when the Director deems it appropriate
Permits public tree planting - beyond the right-of-way	N	12.44.030	Planting in the ROW requires a permit
Requires permit for ROW planting	Y	12.44.030	Planting in the ROW requires a permit
Requires tree plantings around new developments (see also trees in parking lots)	Partially	16.36.030	A landscape plan for the public right-of-way, including street trees of an approved type shall be submitted by the subdivider for the approval of the Community Resources Director.
Regulates tree species which may or may not be planted on public property (approved tree list)	Y	12.44.030	—

Table C1: Municipal Code Matrix

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Private Tree Protection and Preservation			
Restricts tree removal on private property	N	—	—
Permit or approval required for tree removal on private property	Partially	12.45.060; 12.45.080; 12.45.090	Removal of significant trees requires council approval; restricts removal of seven (7) protected native tree species of a certain size and on private property over one acre in size zoned for residential or agricultural purposes, or a property zoned for commercial or industrial purposes (.090 where there is or is not a pending discretionary development application)
Requires preservation of trees during development on private property	Partially	see above	—
Encourages preservation of trees during development on private property	Partially	12.45.080; 12.45.090	Significant and protected trees
Prohibits damage to preserved/protected trees	Partially	12.45.060; 12.45.080	Significant tree modification requires a permit (including injury); same for protected native trees
Prohibits damage or removal of trees on another person's property	Partially	15.36.150	A tree trimming permit and written permission for such cutting or trimming from the property owner whose property abuts the trees to be cut or trimmed are necessary to cut or trim any trees obstructing the moving of any building or structure
Inventory of trees on site required	Partially	12.45.090	With permit application to remove protected trees, also submitted with discretionary development application
Identification of forests/woodlands required	N	—	—
Specific species and/or size tree regulated (e.g. heritage/significant trees)	Y	12.45.010; 12.45.030	"Protected Native Tree" defined as seven (7) protected native tree species of a certain size and on private property over one acre in size zoned for residential or agricultural purposes, or a property zoned for commercial or industrial purposes "Significant Tree" designated for special properties
Location of Critical Root Zone/Dripline required	Y	12.45.050	No work within 30 ft of dripline of significant trees
Minimum canopy coverage requirement set	N	—	—
Identification of riparian buffers, natural areas, preservation zones	N	—	—
Tree protection/preservation plan required	Y	12.45.080; 12.25.090	For pruning roots or branches over 4 inches / more than 10% of canopy, changing grade, or hazardous chemicals within the dripline of protected native trees, and permit for removal of protected native trees
Identification of prohibited activities in dripline/critical root zone	Y	12.45.050	No work within 30 ft of dripline of significant trees
Tree protection fencing required	N	—	—
Location/type of other tree protection measures (e.g. root pruning, aeration, vertical mulching, trunk protection, soil protection, irrigation,) on development plans (e.g. site plans, construction plans, etc.)	Y	12.45.050	For protection of significant trees, work within the dripline, grade changes, storing materials/equipment, and injury requires permission from the Director

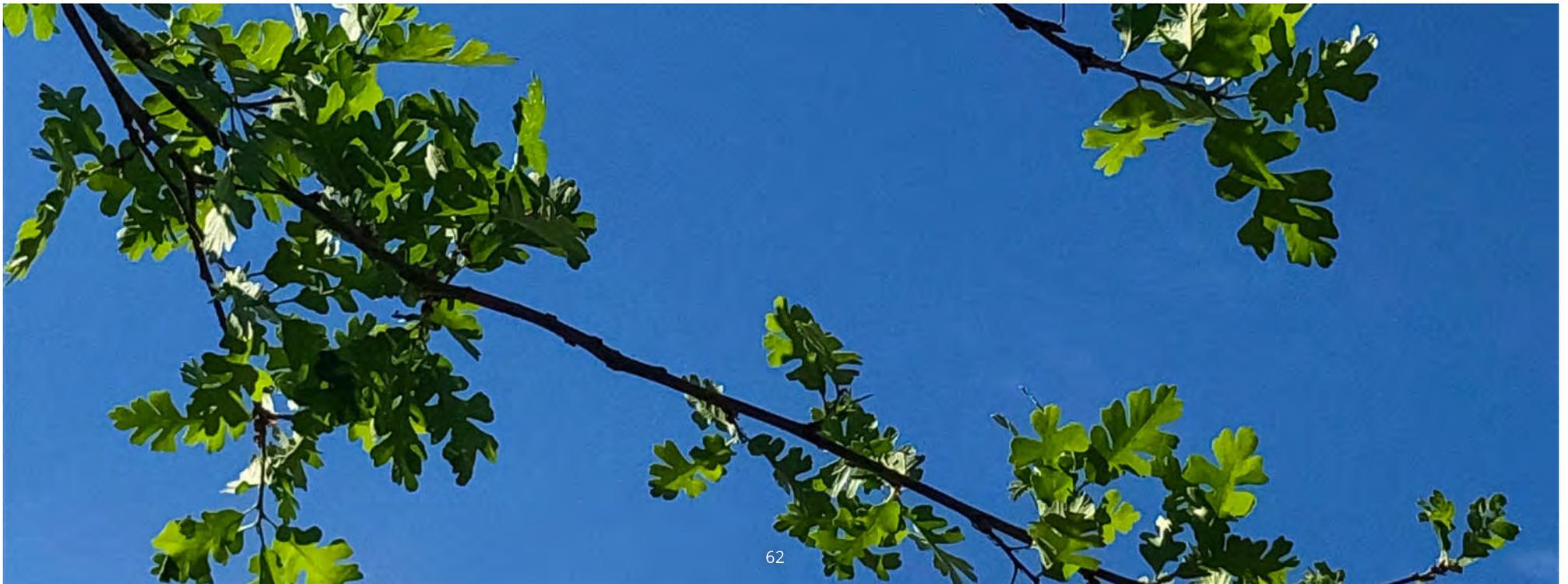
Table C1: Municipal Code Matrix

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Private Tree Protection and Preservation			
Provide credits/incentives for tree preservation	—	—	—
Landscape plan with proposed landscaping and mitigation trees to be planted	Partially		Mitigation planting upon removal of protected native trees during development, landscape plan not specified
Requires Grading plan to include protected/preserved trees	N	—	—
Utility plan with trees to include protected/preserved trees	N	—	—
Tree planting requirements for removal of regulated trees	Y	—	—
Fee in Lieu of planting mitigation trees	Y	12.45.100	When onsite mitigation planting upon removal of protected native trees during development is not feasible
Tree mitigation survival requirements	Y	12.45.100	3 year security for the maintenance of replacement trees upon significant tree removal, can be extended
Fine for removal of regulated trees	Y	12.45.140	Illegal removal of protected private trees results in penalties / fines
Penalties established for damage and removal of preserved/saved trees	Y	12.45.140	Monetary and civil penalties to violations of the chapter
Bonding to ensure required trees are planted	Y	12.45.070	3 year security for the maintenance of replacement trees upon significant tree removal
Bonding utilized to discourage tree removals	N	—	—
Bonding utilized to discourage tree removals	N	—	—
Establishes a formal review of site/tree plans	Partially	12.45.090	for removal of protected native trees, development design reviewed by Tree Advisory Commission, permit may be granted if deemed appropriate
Requires the designated authority to perform site inspections before/after development	N	—	—
Establishes or refers to a Tree Fund	Y	12.45.140	protected private tree violations result in penalties. Fines are deposited into a revolving fund for replacing and planting trees and/or tree-related education projects

Table C1: Municipal Code Matrix

Topic	Addressed (Yes/No)	Chapter and Section	Comments
Other			
Appeal	Y	12.44.030; 12.45.080; 12.45.090	permitting decisions are first appealed by the Director to the Tree Advisory Commission, and then City Council
Landscape plan with proposed landscaping and mitigation trees to be planted	Y	16.28.010	trees with a diameter of 8" or more measured above 24" above the existing grade shall be identified by type, circumference, and dripline on the map; as well as trees proposed for removal; and protected tree locations
Requires Grading plan to include protected/preserved trees	Y	10.32.020; 12.44.010	Traffic Engineer with the authority to require the removal of trees growing on in a maintained parkway or on private property in the setback if it obstructs the view of any driveway or intersection or traffic.; hazard tree can be defined as "interferes with vehicular or pedestrian traffic"

Table C1: Municipal Code Matrix



D. SUSTAINABILITY INDICATORS TABLES

The development of the Plan included an evaluation of industry-defined sustainability indicators to assess current conditions in the urban forest resource, programming, and engagement (as defined by Clark et al 1997 and Kenney et al 2011). The sustainability indicators can be used to understand what areas of the program can be improved to meet industry recommendations.

Napa's assessed level of performance and rationale for selecting that level for each category are included in the following tables.

The indicators are broken up into three categories including:

- 1 The Trees
- 2 The Players
- 3 The Management Approach

THE TREES 1

The Trees performance indicators analyze how Napa is doing in relation to City-owned trees and urban tree canopy. Overall Napa is performing at a moderate level with one category ranked as high and one ranked as low.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
Urban Tree Canopy	Achieve the desired tree canopy cover according to goals set for the entire city and neighborhoods. Alternatively, achieve 75% of the total canopy possible for the entire city and in each neighborhood.	Canopy is decreasing -and/or- No canopy goals have been set	Canopy is not on a trajectory to achieve the established goal.	Canopy goal is achieved, or well on the way to achievement.	Moderate	The City of Napa's Tree Canopy and Land Cover Assessment (2024), which mapped tree canopy throughout the city, found that the average tree canopy cover was 21.5% as of 2022. The report found that Napa's tree canopy increased from increased from 18.1% (2012) to 21.5% (2022).
Equitable Distribution (Location of Canopy)	Achieve low variation between tree canopy and equity factors citywide by neighborhood. Ensure that the benefits of tree canopy are available to all, especially for those most affected by these benefits.	Tree planting and public outreach and education is not determined by tree canopy cover or benefits.	Tree planting and public outreach and education is focused on neighborhoods with low tree canopy.	Tree planting and public outreach and education is focused in neighborhoods with low tree canopy and a high need for tree benefits.	Low	Based on the Tree Equity Score by American Forests, 80% of block groups (48 of 64) have a high tree equity score (above 75%). Greater tree canopy cover tends to be on the east and west edges of the city. Tree planting and public education and outreach is not directly related to equitable distribution of tree canopy and benefits.
Age of Trees (Size and Age Distribution)	Establish a diverse-aged population of public trees across the entire city and for each neighborhood. Ideal standard: 0-8" DSH: 40% 9-17" DSH: 30% 18-24" DSH: 20% Over 24" DSH: 10%	Age distribution is not proportionately distributed across size classes at the city level.	There is GIS data regarding land cover around the city, including the location of private tree canopy. There is no private tree inventory.	Age distribution is generally aligned with the ideal standard diameter classes at the neighborhood level.	Moderate - High	Napa has a nearly ideal age distribution. 52.3% of inventoried trees are between 0-8 inches in diameter at standard height (DSH) and 6.3% are over 24 inches in DSH.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
Condition of Publicly Owned Trees (<i>trees managed intensively</i>)	Possess a detailed understanding of tree condition and potential risk of all intensively-managed, publicly-owned trees. This information is used to direct maintenance actions.	No current information is available on tree condition or risk.	Information from a partial or sample or inventory is used to assess tree condition and risk.	Information from a current, GIS-based, 100% complete public tree inventory is used to indicate tree condition and risk.	Moderate - High	Data collection for the public tree inventory included condition and maintenance needs for publicly owned trees. Currently, 93.5% of trees are in fair or better condition.
Condition of Publicly-Owned Natural Areas (<i>trees managed intensively</i>)	Possess a detailed understanding of the ecological structure and function of all publicly-owned natural areas (such as woodlands, ravines, stream corridors, etc.), as well as usage patterns.	No current information is available on tree condition or risk.	Publicly-owned natural areas are identified in a sample-based "natural areas survey" or similar data.	Information from a current, GIS-based, 100% complete natural areas survey is utilized to document ecological structure and function, as well as usage patterns.	High	The City of Napa's Tree Canopy and Land Cover Assessment (2024) mapped tree canopy health throughout the city, including Natural Areas. The health ratings for the entire urban forest showed that 76.0% of the canopy is in fair or better condition.
Trees on Private Property	Possess a solid understanding of the extent, location and general condition of trees on private lands.	No data is available on private trees.	Current tree canopy assessment reflects basic information (location) of both public and private canopy combined.	Detailed information available on private trees. Ex. bottom-up sample-based assessment of trees.	Moderate	There is GIS data regarding land cover around the city, including private tree canopy but private trees are not inventoried.
Diversity	Establish a genetically diverse population of publicly-owned trees across the entire city and for each neighborhood. Tree populations should be composed of no more than 30% of any family, 20% of any genus, or 10% of any species.	Fewer than five species dominate the entire tree population citywide.	No species represents more than 20% of the entire tree population citywide.	No species represents more than 10% of the entire tree population citywide.	Moderate	The community tree inventory has two species that exceed the 10% rule: Grape myrtle / Lagerstroemia spp. (18.5%) and coast live oak / Quercus agrifolia (10.7%).
Sustainability	Establish a tree population suited to the urban environment and adapted to the overall region. Suitable species are gauged by exposure to imminent threats, considering the "Right Tree for the Right Place" concept and invasive species.	No current information is available on suitability. - or - Less than 50% of trees are considered suitable for the site.	50% to 75% of trees are considered suitable for the site.	More than 75% of trees are considered suitable for the site.	Moderate	The Resource Analysis (2024) included a relative performance index which suggests that many species are performing well and are suitable for the environment. In the past, many trees were planted in sites that were not large enough for their mature stature, and therefore not suitable for their particular location.
Soil Volume	Establish minimum street tree soil volume requirements to ensure there is adequate space and soil for street trees to thrive. Minimum soil volumes by mature size: 1000 cubic feet for large trees; 600 cubic feet for medium trees; 300 cubic feet for small trees.	Minimum street tree soil volumes have not been established.	Minimum street tree soil volume has been established based on mature size of tree.	Minimum street tree soil volumes have been established and are required to be adhered to for all new street tree planting projects.	Low - Moderate	Current practices are to plant trees based on size of the tree and minimum grow space available (Napa Master Street Tree List). Although soil volumes have not been calculated, this process allows managers to select a tree for a particular site based on soil availability.

Table D1. Assessed Level and Rationale for The Trees Indicators.

THE PLAYERS 2

The Players performance indicators analyze how Napa is doing in relation to stakeholders, community members and department cooperation. Overall, Napa is performing at a low-moderate level. Napa is performing at a high level in one category.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
Neighborhood Action	Residents understand, cooperate, and participate in urban forest management at the neighborhood level. Urban forestry is a neighborhood-scale issue.	Little or no resident involvement or neighborhood action.	Some active groups are engaged in advancing urban forestry activity, but with no unified set of goals or priorities.	The majority of all neighborhoods are organized, connected, and working towards a unified set of goals and priorities.	Moderate	There is a lack of unification. Typically, local groups are advocating through a climate lens which indirectly involves trees and canopy.
Large Private and Institutional Landholder Involvement	Large, private, and institutional landholders embrace citywide goals and objectives through targeted resource management plans.	Large private land holders are unaware of issues and potential influence in the urban forest. No large private land management plans are currently in place.	Education materials and advice is available to large private landholders. Few large private landholders or institutions have management plans in place.	Clear and concise goals are established for large private land holders through direct education and assistance programs. Key landholders and institutions have management plans in place.	Low - Moderate	Waterways are privately owned but there is an easement for public jurisdiction over them. The Flood District operates under a management plan.
Green Industry Involvement	The green industry works together to advance citywide urban forest goals and objectives. The city and its partners capitalize on local green industry expertise and innovation.	Little or no involvement from green industry leaders to advance local urban forestry goals.	Some partnerships are in place to advance local urban forestry goals, but more often for the short-term.	Long-term committed partnerships are working to advance local urban forestry goals.	Low - Moderate	There is little City involvement with green industry, and the focus is on short-term goals.
City Department and Agency Cooperation	All city departments and agencies cooperate to advance citywide urban forestry goals and objectives.	Conflicting goals and/or actions among city departments and agencies.	Informal teams among departments and agencies are communicating and implementing common goals on a project-specific basis.	Common goals and collaboration occur across all departments and agencies. City policy and actions are implemented by formal interdepartmental and interagency working teams on all city projects.	Low - Moderate	There is some cohesion amongst departments across the City, although goals are not always aligned.
Funder Engagement	Local funders are engaged and invested in urban forestry initiatives. Funding is adequate to implement citywide urban forest management plan	Little or no funders are engaged in urban forestry initiatives.	Funders are engaged in urban forestry initiatives at minimal levels for short-term projects.	Multiple funders are fully engaged and active in urban forestry initiatives for short-term projects and long-term goals.	Low	Funding for the Forestry Program comes from the General Fund and not from the private sector.
Utility Engagement	All utilities are aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	Utilities and city agencies act independently of urban forestry efforts. No coordination exists.	Utilities and city agencies have engaged in dialogues about urban forestry efforts with respect to capital improvement and infrastructure projects.	Utilities, city agencies, and other stakeholders integrate and collaborate on all urban forestry efforts, including planning, site work, and outreach/education.	Moderate	City Code includes regulations that protect public trees, and they apply to collaborating agencies and managing partners. City regulations are not always followed and the enforcement of the regulations if not clearly outlined.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
State Engagement	State departments/agencies are aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	State departments/agencies and City agencies act independently of urban forestry efforts. No coordination exists.	State departments/agencies and City agencies have engaged in dialogues about urban forestry efforts with respect to capital improvement and infrastructure projects.	State departments/agencies, City agencies, and other stakeholders integrate and collaborate on all urban forestry efforts, including planning, site work, and outreach/education.	High	There is a high level of engagement though state grant funding to support urban canopy growth and development.
Public Awareness	The general public understands the benefits of trees and advocates for the role and importance of the urban forest.	Trees are generally seen as a nuisance, and thus, a drain on city budgets and personal paychecks.	Trees are generally recognized as important and beneficial.	Trees are seen as valuable infrastructure and vital to the community's well-being. The urban forest is recognized for the unique environmental, economic, and social services it provides to the community.	Moderate	The majority of the public values trees and sees them as beneficial.
Regional Collaboration	Neighboring communities and regional groups are actively cooperating and interacting to advance the region's stake in the city's urban forest.	Little or no interaction between neighboring communities and regional groups.	Neighboring communities and regional groups share similar goals and policy vehicles related to trees and the urban forest.	Regional urban forestry planning, coordination, and management is widespread.	Moderate	Napa Resource Conservation District is an active regional collaborator. There is funding for invasive species management and they are looking into avenues to increase urban forestry funding in other ways.

Table D2. Assessed Level and Rationale for The Players Indicators.

THE MANAGEMENT APPROACH 3

The Management performance indicators analyze how Napa is doing in relation to the City's management of the urban forest. Overall, Napa is performing at a moderate-high level. Napa is performing at a high level in several categories. Overall, the City is ranked the highest in The Management category.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
Tree Inventory	Comprehensive, GIS-based, current inventory of all intensively-managed public trees to guide management, with mechanisms in place to keep data current and available for use. Data allows for analysis of age distribution, condition, risk, diversity, and suitability.	No inventory or out-of-date inventory of publicly-owned trees.	Partial or sample-based inventory of publicly-owned trees, inconsistently updated.	Complete, GIS-based inventory of publicly-owned trees, updated on a regular, systematic basis.	High	A complete, up-to-date GIS based inventory of publicly owned trees was completed in 2023. The inventory is regularly updated in an asset management system.
Canopy Assessment	Accurate, high-resolution, and recent assessment of existing and potential city-wide tree canopy cover that is regularly updated and available for use across various departments, agencies, and/or disciplines.	No tree canopy assessment.	Sample-based canopy cover assessment, or dated (over 10 years old) high resolution canopy assessment.	High-resolution tree canopy assessment using aerial photographs or satellite imagery.	Moderate	The most up to date satellite imagery of Napa was analyzed and reported on in the City of Napa's Tree Canopy and Land Cover Assessment (2024).

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
Management Plan	Existence and buy-in of a comprehensive urban forest management plan to achieve city-wide goals. Re-evaluation is conducted every 5 to 10 years.	No urban forest management plan exists.	A plan for the publicly-owned forest resource exists but is limited in scope, acceptance, and implementation.	A comprehensive plan for the publicly owned forest resource exists and is accepted and implemented.	High	Through this plan, Napa is focused on the long-term success of the urban forest. Napa is addressing today's concerns and establishing a community focused urban forestry program that can adapt as priorities change and goals are achieved.
Risk Management Program	All publicly-owned trees are managed for maximum public safety by way of maintaining a city-wide inventory, conducting proactive annual inspections, and eliminating hazards within a set timeframe based on risk level. Risk management program is outlined in the management plan.	Request-based, reactive system. The condition of publicly-owned trees is unknown.	Some partnerships are in place to advance local urban forestry goals, but more often for the short-term.	There is a complete tree inventory with risk assessment data and a risk abatement program in effect. Hazards are eliminated within a set time period depending on the level of risk.	Moderate	The City reacts quickly to service requests around risk management and has an understanding of the priority maintenance needs of the public tree inventory.
Maintenance Program of Publicly-Owned Trees <i>(trees managed intensively)</i>	All intensively-managed, publicly-owned trees are well maintained for optimal health and condition in order to extend longevity and maximize benefits. A reasonable cyclical pruning program is in place, generally targeting 5 to 7 year cycles. The maintenance program is outlined in the management plan.	Request-based, reactive system. No systematic pruning program is in place for publicly-owned trees.	All publicly-owned trees are systematically maintained, but pruning cycle is inadequate.	Common goals and collaboration occur across all departments and agencies. City policy and actions are implemented by formal interdepartmental and interagency working teams on all city projects.	Moderate - High	There is some cohesion amongst departments across the City, although goals are not always aligned.
Maintenance Program of Publicly-Owned Natural Areas <i>(trees managed intensively)</i>	The ecological structure and function of all publicly-owned natural areas are protected and enhanced while accommodating public use where appropriate.	No natural areas management plans are in effect.	Only reactive management efforts to facilitate public use (risk abatement).	Management plans are in place for each publicly-owned natural area focused on managing ecological structure and function and facilitating public use.	Moderate - High	Tree canopy data is available for publicly-owned natural areas. Trees in natural areas are managed for risk, and ecological function, and public use.
Planting Program	Comprehensive and effective tree planting and establishment program is driven by canopy cover goals, equity considerations, and other priorities according to the plan. Tree planting and establishment is outlined in the management plan.	Tree establishment is ad hoc.	Tree establishment is consistently funded and occurs on an annual basis.	Tree establishment is directed by needs derived from a tree inventory and other community plans and is sufficient in meeting canopy cover objectives.	Moderate	Funding is consistent for tree planting. Tree planting occurs on an annual basis and is primarily focused on replacing trees that were previously removed.
Tree Protection Policy	Comprehensive and regularly updated tree protection ordinance with enforcement ability is based on community goals. The benefits derived from trees on public and private property are ensured by the enforcement of existing policies.	No tree protection policy.	Policies are in place to protect trees, but the policies are not well-enforced or ineffective.	Protections policies ensure the safety of trees on public and private land. The policies are enforced and supported by significant deterrents and shared ownership of city goals.	Moderate - High	Policies are in place to protect trees near construction projects and protected trees. Private tree protections apply to properties larger than 1 acre in size.

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			Rating	Notes
		Low	Moderate	High		
City Staffing and Equipment	Adequate staff and access to the equipment and vehicles to implement the management plan. A high level urban forester or planning professional, strong operations staff, and solid certified arborist technicians.	Insufficient staffing levels, insufficiently-trained staff, and/or inadequate equipment and vehicle availability.	Certified arborists and professional urban foresters on staff have some professional development, but are lacking adequate staff levels or adequate equipment.	Multi-disciplinary team within the urban forestry unit, including an urban forestry professional, operations manager, and arborist technicians. Vehicles and equipment are sufficient to complete required work.	Moderate	The current urban forestry workload exceeds in-house staff and contractor capacities. Staff are certified arborists and professional urban foresters are on staff. Equipment is adequate, well maintained, and is included in a replacement program.
Funding	Appropriate funding in place to fully implement both proactive and reactive needs based on a comprehensive urban forest management plan.	Funding comes from the public sector only, and covers only reactive work.	Funding levels (public and private) generally cover mostly reactive work. Low levels of risk management and planting in place.	Dynamic, active funding from engaged private partners and adequate public funding are used to proactively manage and expand the urban forest.	Low - Moderate	Funding for the urban forestry program is consistent, but primarily supports reactive work. The City has acquired grant funding to supplement other public sources of funding.
Disaster Preparedness and Response	A disaster management plan is in place related to the city's urban forest. The plan includes staff roles, contracts, response priorities, debris management and a crisis communication plan. Staff are regularly trained and/or updated.	No disaster response plan is in place.	A disaster plan is in place, but pieces are missing and/or staff are not regularly trained or updated.	A robust disaster management plan is in place, regularly updated and staff is fully trained on roles and processes.	Moderate	There is a disaster plan in place, but Napa does not have a debris management plan for large scale events.
Resilience	The City understands the climate and pest/disease vulnerability of its trees and community. Management decisions are informed by strategies to improve urban forest resilience and mitigate the harmful effects of climate change.	The vulnerability of the urban forest to future climate and pest/disease threats has not been studied.	The City understands climate and/or pest/disease vulnerability, but this does not influence management decisions.	Urban forest management decisions are designed to improve the resilience of both the urban forest and people. For example, there are credit or incentive programs in place for trees, or GHG benefits of trees are tracked, or there is a wood utilization program in place.	Moderate	Napa is gaining a better understanding of the vulnerabilities surrounding their urban forest and has baseline data for monitoring and planning purposes.
Communication	Effective avenues of two-way communication exist among city departments and between the city and its residents. Messaging is consistent and coordinated, when feasible.	No avenues are in place. City departments and public determine on an ad-hoc basis the best messages and avenues to communicate.	Avenues are in place, but used sporadically and without coordination or only on a one-way basis.	Avenues are in place for two-way communication, are well-used with targeted, coordinated messages.	High	Sound avenues of communication are in place for urban forestry management, visioning, and interdepartmental engagement.

Table D3. Assessed Level and Rationale for The Management Indicators.

E. COMMUNITY SURVEY RESPONSES

The full responses to the community survey are included below.

Currently, canopy cover in Napa is 21.5%. When asked about the amount of trees, the majority of the 147 respondents (65.3%) agreed that the City of Napa has too few trees while a third (33%) is pleased with the current level of canopy cover (Figure E1).

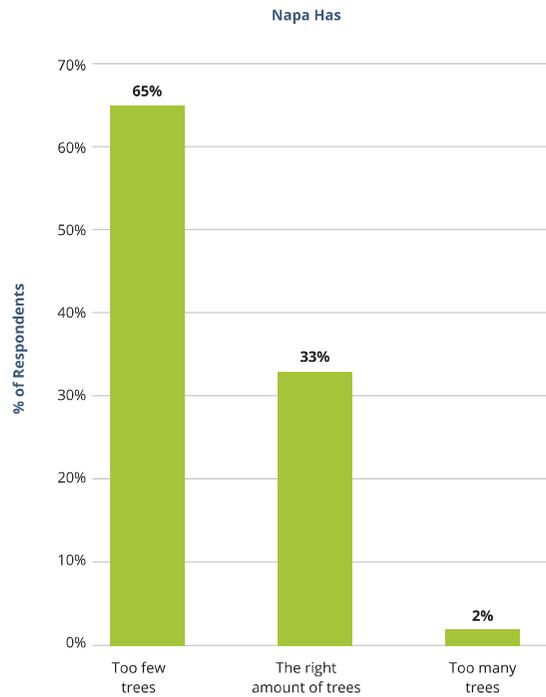


Figure E1. In your opinion, Napa has:

The community places a high value on trees on private and public properties. A significant majority of respondents (82%) strongly agree that trees on private property and public property (77%) are important to them (Figures E2 and E3).

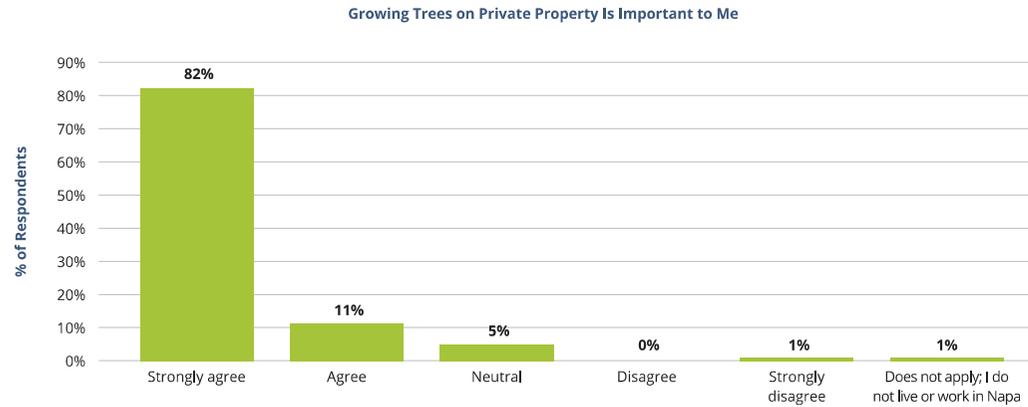


Figure E2. The trees growing on my private property in Napa are important to me.

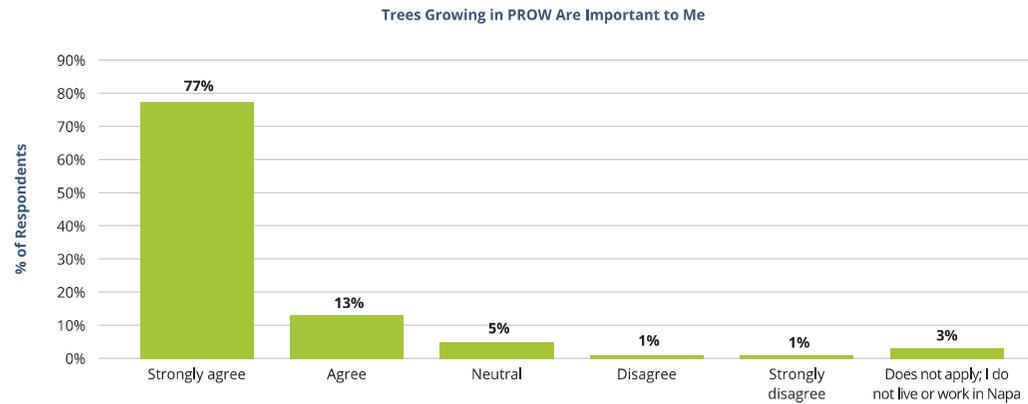


Figure E3. The trees growing in the public right-of-way in front of my house (or business) are important to me.

Alongside their numerous benefits, trees can present challenges. The survey recorded the top three concerns of each respondent. Infrastructure conflicts (26.7%), nuisance pests (22.7%), and litter (12.1%) presented the highest level of concern (Figure E4).

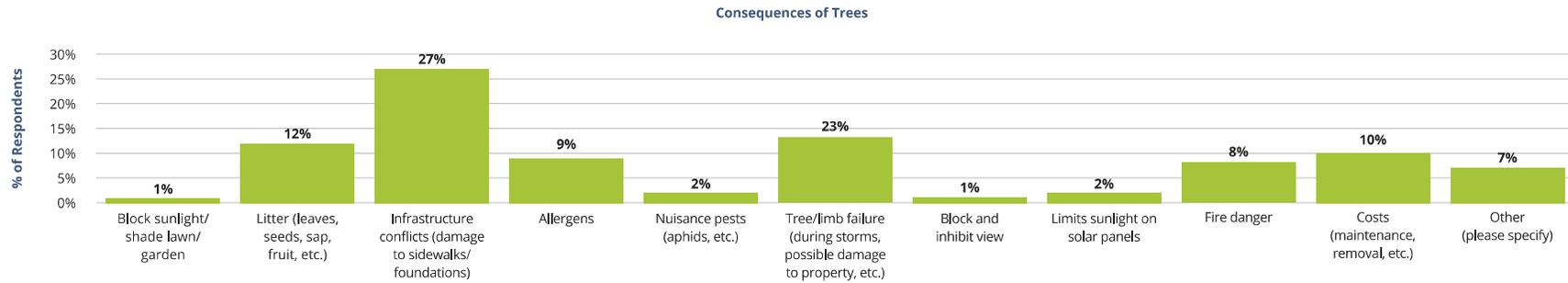


Figure E4. What consequences of trees do you dislike? Please select your top 3 choices:

Incorporating private property into planting plans is essential to meet canopy goals, as it supplements limited public space. Survey results show that 40% of residents are willing to plant and care for trees, 29% are unwilling, and 26% face limitations like lack of space or ownership (Figure E5).



Figure E5. Describe your willingness to plant trees on your private property in Napa.

Despite a general willingness to plant trees and a shared appreciation for them, various barriers prevent people from taking action. A lack of information on tree care and tree selection was cited by 30% of respondents as an obstacle. Additionally, financial concerns were stated as a concern for 17.5% of respondents (Figure E6).

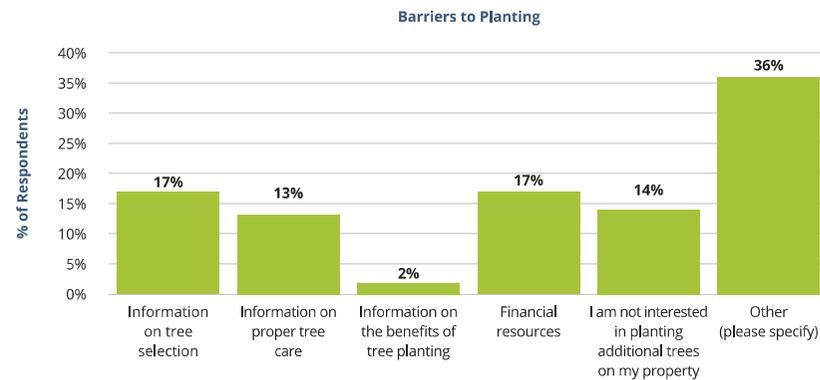


Figure E6. What are barriers to planting additional trees on your property? Check all that apply.

Survey results showed a divide in satisfaction, with 49% of respondents satisfied with the current level of tree care (Figure E7). Respondents valued tree pruning, tree planting, and the sidewalk replacement program (Figure E8).



Figure E7. Describe your level of satisfaction with the current level of care that the City of Napa provides for street trees.

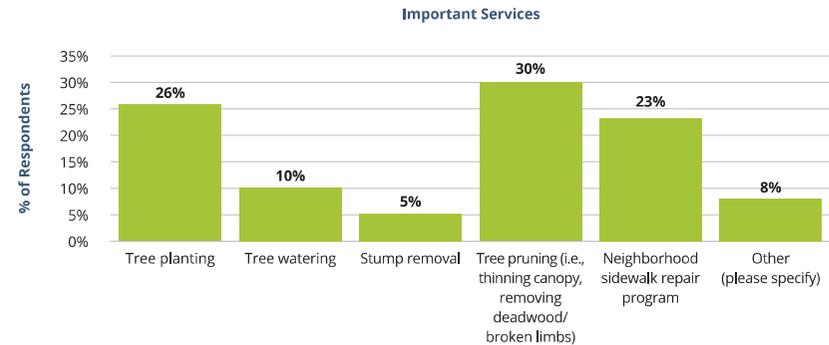


Figure E8. What do you believe are the most important services provided by the Parks and Urban Forestry Division?

Educational materials can unite residents in support of the urban forest and foster inclusivity. The top three topics respondents wanted to learn more about were species selection (21%), city regulations (%17), and general maintenance (16%) (Figure E9).

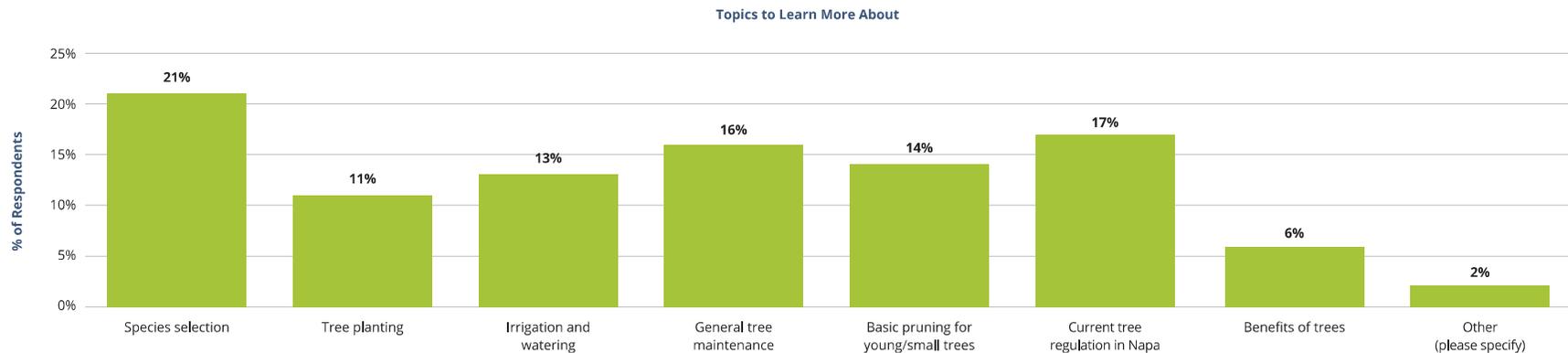


Figure E9. What urban forestry related topics would you be most interested in learning more about (choose all that apply)?

The majority of respondents live in the city of Napa (87%) (Figure E10). Council District 2 saw the greatest participation (29%) followed by Council District 4 (25%), but all Districts saw some level of participation (Figure E11).

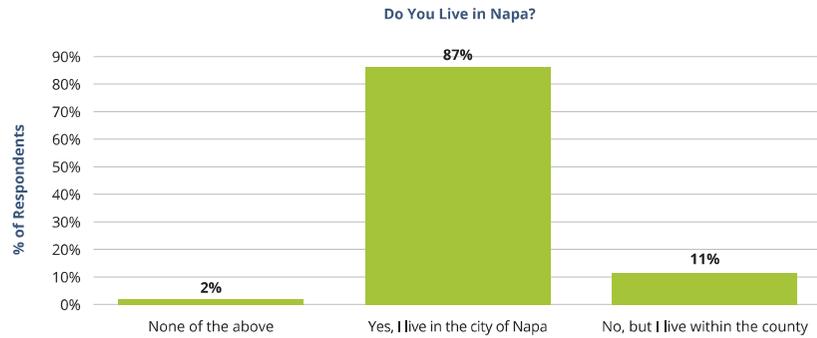


Figure E10. Do you live within the Napa city boundaries?

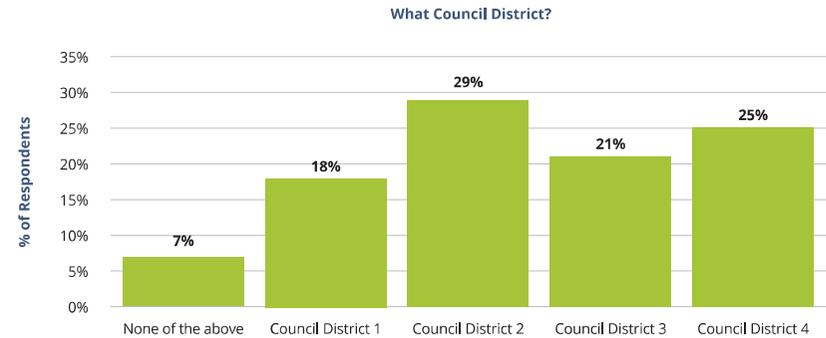


Figure E11. What Council District do you live in? (see map in the above question)

Supplemental Survey Responses

Other (Specified)

- Dead tree removal and replacement.
- Tree health evaluation
- Preserve trees from being rashly cut down.
- Getting work that needs to be done, done. That includes sidewalk repair.
- Remove and replacement of hazardous trees or trees that disrupt sidewalks
- Planting native and drought resistant species
- working with residents to plant proper trees in the sidewalk strips
- keeping parks clean and safe
- Care for existing trees including pruning that promotes healthy growth, and NOT excessive or harmful pruning.
- Public resource
- Preventative Care to avoid sidewalk or street damage
- choosing the right tree for the location

Other (Specified)

- Raising sidewalks vs. taking out trees. Los Altos and Palo Alto have done a great job implementing this.
- Education
- Maintaining parks
- Identifying and protecting heritage trees/species.
- Tree replacement to avoid more damage
- Vegetation maintenance along public ROW (not just trees)
- Adding native pollinator habitat
- specifying trees that include CA native trees of varying sizes
- Planting the correct tree in the correct place - hot weather appropriate, powerline friendly
- They do not remove dead limbs or street trees! We have been told its our responsibility
- controlling the invasive Chinese Tree of Heaven choking out native species

Other (Specified)

- Providing root zone volume and drainage for big tree species planting
- Replacement of aging trees with native species
- Develop pollinator (wild garden) habitats in and around public spaces
- overcoming barriers to planting native street trees (e.g., modifications to sidewalks, etc. that can accommodate roots of native trees)
- Make a plan to maintain and enhance the urban forest as a near term net carbon sink, consistent with Napa's Climate Emergency Resolution, and the newly-adopted General Plan - policy CCS 1-1 Implement immediate and sustained actions in support of achieving net zero climate pollutants from public and private operations within the City by 2030.
- I'm not familiar enough with these services to rate 3rd choice
- Maintenance of public urban forest and parks
- Keeping parks free of off leash dogs!
- Tree maintenance of trees on public property
- Right plant, right place

Table E1. What do you believe are the most important services provided by the Parks and Urban Forestry Division? Other, please specify:

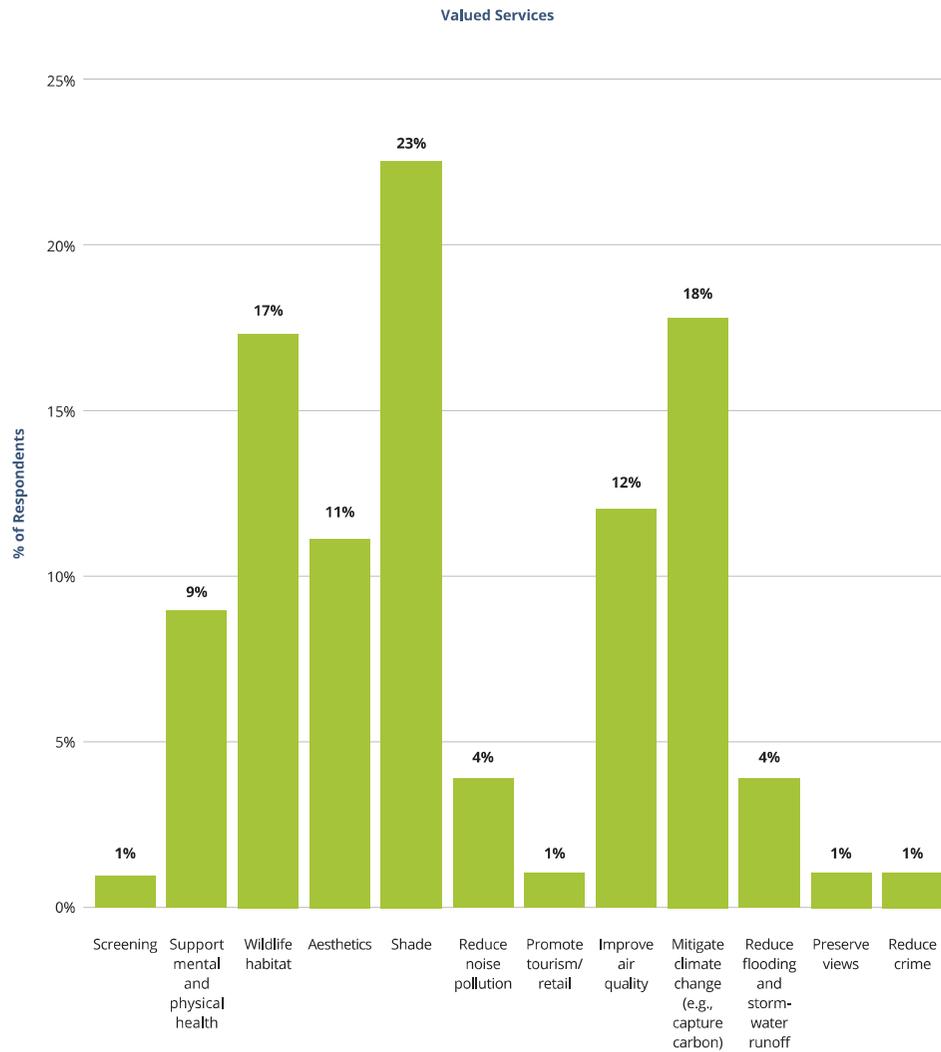


Figure E12. What tree benefits/services do you value? Please select your top 3 choices:

Other (Specified)

Lack of proper tree maintenance.
Nothing else, but form requires checking 3 boxes.
nuisance tree species
non-native trees planted in sidewalk strips
benefits far outweigh concerns
Just sap/sticking residue
Trees that are over trimmed and look lopsided
Planting wrong type of trees in wrong places
Non native species are over represented
only damage to sidewalks. Survey demanded 3 things
Damaging infrastructure: storm drain and hydrant
None
None.
invasive species
benefits outweigh the effects of trees
None of the above
Can't think of any
I don't dislike trees
I don't have a third choice
prevalence of non-native trees
None
I don't dislike any of the above
Only tree litter really bothers me.
Benefits highly outweigh detriments.

Table E2. What consequences of trees do you dislike? Please specify.

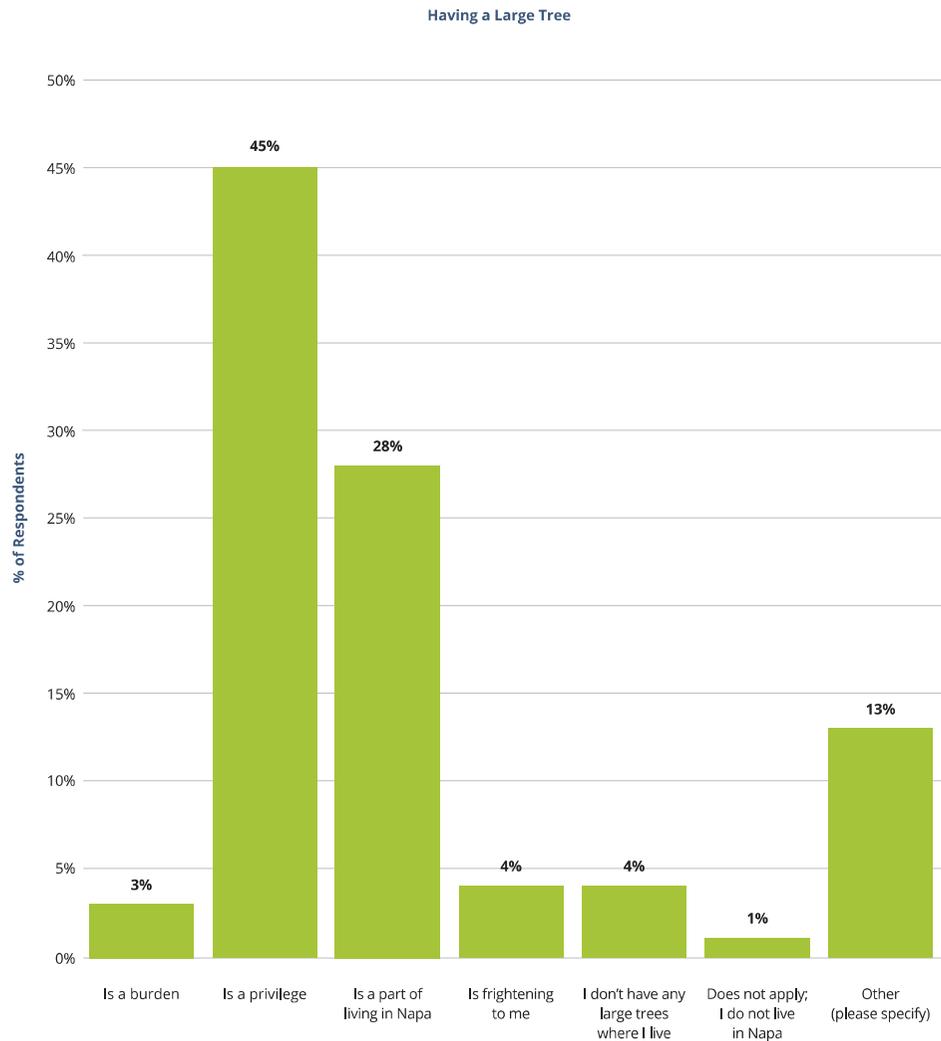


Figure E13. Having a large tree(s) where I live in Napa... (select all that apply)

Other (Specified)

- It is a gift of nature that we need to care and maintain.
- Provides significant wildlife habitat and blocks light pollution
- I like seeing large native trees in Napa
- provides needed shade for me and habitat for interesting birds and animals
- cost of tree trimming
- would be great if the city takes better care of them
- Has consequences for neighbors that they cannot manage.
- awesome free shade and adds beauty and habitat for biodiversity
- provide shade/reduce city temps and improve views
- Is a hazard and costly
- Is a joy. We look forward to our trees growing taller
- Increased my property value
- but could be a fire hazard and can definitely be a safety hazard if buckle the sidewalk and/or roadway
- Are very expensive to maintain and prune
- Is a great part of living in Napa
- deciduous trees supply summer shade and winter sun
- The shade saves us from excessive heat in summer.
- Is part
- Is a responsibility
- Provides shade
- WISH I HAD MORE/BETTER TREES IN MY NEIGHBORHOOD
- some large redwoods in our neighborhood pose a threat to those homes, which i am concerned about
- Is one of the main reasons why we chose Napa— large trees bring beauty (healing for humans), reduce air pollution, and provide essential carbon removal
- Adds character to a place and maximizes carbon capture
- Is important to keep
- My neighbors have large oaks. I planted trees that are now large. So many naked, heat island backyards.

Table E3. Having a large tree(s) where I live in Napa... (select all that apply)

Other (Specified)

- Location and how healthy is the tree.
- Health, appropriate tree planted in appropriate location, ability to maintain
- health of tree itself
- Shade- more residents are walking to school and work. Plus, tourists like to walk ride bikes in Napa.
- Infrastructure
- If it's damaging property or sidewalks, it should be removed and a suitable replacement tree should be planted.
- Invasive species like Glossy Privet trees need to be removed.
- Age and health of the tree
- tree risk management
- Is part of our beauty and quality of life here
- The summer shade that allows us to walk, meet with our neighbors, cool places for the kids to play and make our homes more comfortable.
- history
- Maturity - mature trees sequester more carbon
- loveliness
- Shading of sidewalks, bikeways, and grey infrastructure; Using a standardized risk assessment methodology
- Educational opportunities.

Table E4. What criteria do you think should be considered when defining if a tree should be preserved? (Other, please specify)

Other (Specified)

- I live just outside the city limits
- I have planted over 100 trees.
- I planted 12 in last 4 years!
- Replace with better
- More trees please
- removing / replacing fruit trees
- Already planted as many as could fit! Have 8!

Table E5. Describe your willingness to plant trees on your private property in Napa. (Other, please specify)

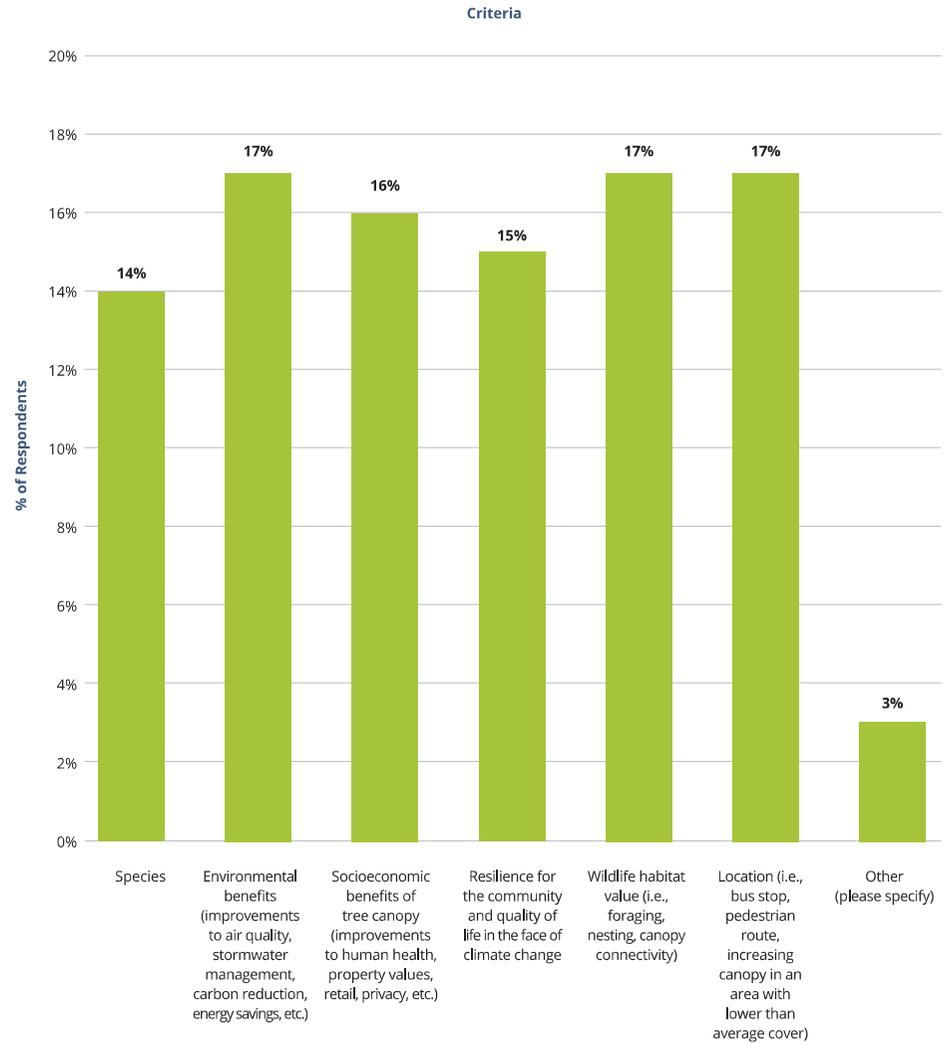


Figure E14. What criteria do you think should be considered when defining if a tree should be preserved? Choose all that apply.

Other (Specified)

I rent

I have no room.

The ones I have have over grown so much and crowded each other, I've had to take some down.

Space for the tree to grow.

Watering and maintenance.

Not enough space

Space

Tree selection on the approved list is not appealing

Small space. Pge and water companies are in the way.

I'm a renter

I lack space for additional trees

help on location to plant trees (landscaping)

have 4 in front and 5 in back yard

Renter

Needs to be part of overall landscape and maintenance plan

Available space, species of existing trees (walnuts)

lack of space

I would like to plant more trees, thinking of tearing out more cement first.

Property is too small for additional trees.

Space

No more room!

Lack of space (already have 7 trees on 0.14 acre lot with 1200 sq ft home)

Space, fire risk

none

space. I have a very small yard

Other (Specified)

Small lot.

Time and cost for clean up can't plant with infrastructure there

We are planning on planting when the weather cools in the fall.

I live in an HOA and planting is not allowed.

I would only plant CA natives

Water - being in a water deficit district and in a fire area, we need to be careful where we plant trees

Waiting for the right time.

PG&E will butcher them claiming right-of-way for wires

Not enough space and sunlight.

i rent but also have a large redwood in the small back yard i have

Running out of space for more trees

There are no barriers to planting additional trees on my property

We have enough trees, redwoods and oaks. Our backyard is quite shady.

None

Available space

We have enough shade trees currently.

I have no more vacant dirt!

I rent

I would love to plant trees on my personal property if I ever have a chance to buy an absurdly overpriced house here.

space - I have planted many trees on my property already

I am a renter

Space

I am a renter

none

No barriers

Other (Specified)

I DON'T KNOW ENOUGH ABOUT TREES TO DO IT ON MY OWN

Only one spot left but maybe too close to driveway (have 8 trees already)

no space, i have many trees already

HOA restrictions

Space

Condo

Getting adequate water to curb strip; choosing appropriate tree

I've planted out my property.

My lot has all the trees it can fit

Table E6. What are barriers to planting additional trees on your property? Other, please specify

Other (Specified)

I tried to report my neighbors massive removal of oak trees on their property but no one could help me. Just said not all trees are protected. Not clear who to call.

Our arborist gets the permits

I didn't know you need a permit

Our boulevard tree has a lot of dead branches and needs trimming buy I didn't want to pay the \$200 deposit.

I have not pulled a permit

Table E7. If you have pulled a permit for tree work, how did you feel about the process? (Other, please specify)

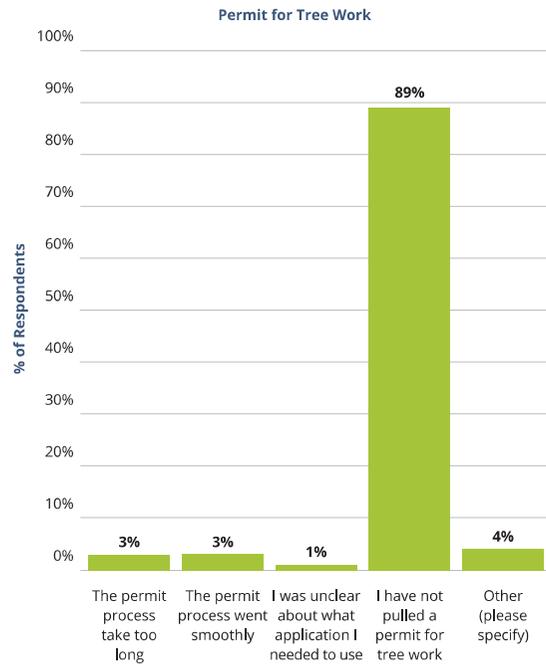


Figure E15. If you have pulled a permit for tree work, how did you feel about the process?

Other (Specified)

More planting of new trees so that as trees age and die they have replacements growing

Evaluate trees that are dead or dying and remove or care for them.

Remove trees causing sidewalk disruption and replace with trees that don't

replacing non-native street trees with native species

planting more trees, especially tall trees

Tree maintenance and care

Maintenance and replacement of trees with more appropriate trees if property damage is occurring.

Browns Valley Road could use more trees and a green center divide in some spots. sidewalk repair and reconfiguration to accommodate root growth for established species

Replacement before problems get worse or costs increase due to add damages

Fix sidewalks not trees

keep the trees, fix the side walks.

Removal of dead or dying trees

Removal and control of invasive species

question/choice of answers not clear

Pruning to develop good structure

plant more trees

fix the sidewalk while planning for the tree's future growth

Establish more street trees, especially in lower income neighborhoods

Work around existing mature trees on private property and along roadsides to avoid cutting them down

additional care to allow trees to grow to their full potential as a front line defense against climate change, especially as we turn to our urban forest for the negative emissions needed to achieve our 2030 net zero goal.

BETTER TREES, MORE TREES, TREE HEALTH

I feel the focus to be on adding trees, not removing trees, with the exception of safety hazards. Large trees need to stay in the ground for carbon removal.

Strongly promote more tree planting by home and business owners

Table E8. If additional funding was available, which maintenance areas would you like to see increased maintenance for street trees? Other, specified.

Maintenance

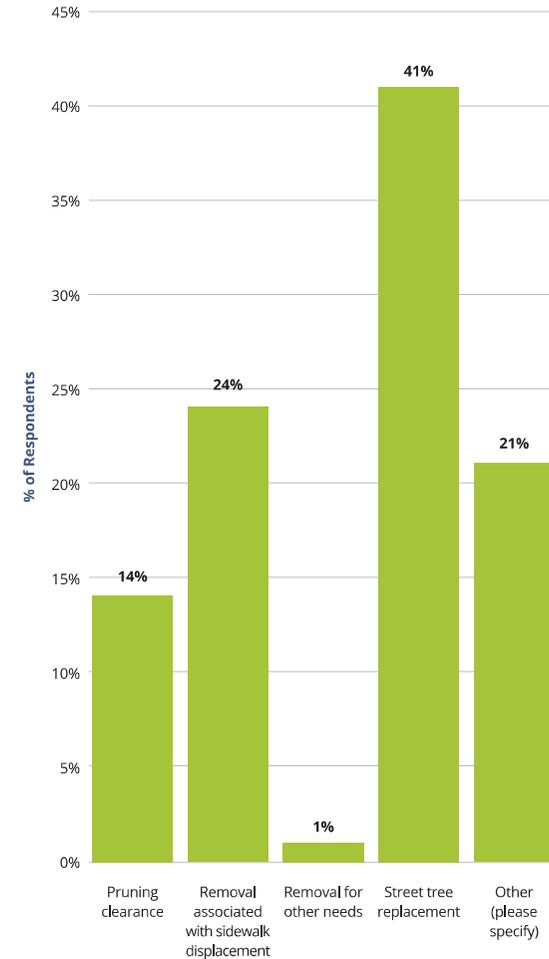


Figure E16. If additional funding was available, which maintenance areas would you like to see increased maintenance for street trees? Choose the response that best represents your level of agreement with the statement.

Other (Specified)

More avenues for communication and information on this area.

Private consults, pamphlets/newsletters

Email

Include info in monthly garbage bill mailings

Social media

Master gardeners

Anything that allows talking to a real person

Education for kids, sure, but with the understanding that their future is in our hands. We hit reset today, which means we tell kids how we're serious about change, sequestering more carbon than we lose, which means no more burdening them with our carbon debt.

Idk

Volunteer in ways other than planting

Table E9. What is the best way to share information with you? Other, specified

Other (Specified)

What support does the city offer in this area.

Consult about why tree planted by city looks diseased and the two next to it, which were planted at the same time, are doing great!

Benefits/types of native species

Designing root zones to accommodate large trees

establishing shrubby, pollinator type habitats in city parks

How do we maintain and enhance our urban forest as a near term net carbon sink?

Carbon budget

None

Table E10. Describe your willingness to plant trees on your private property in Napa. (Other, please specify)

Information Outlet

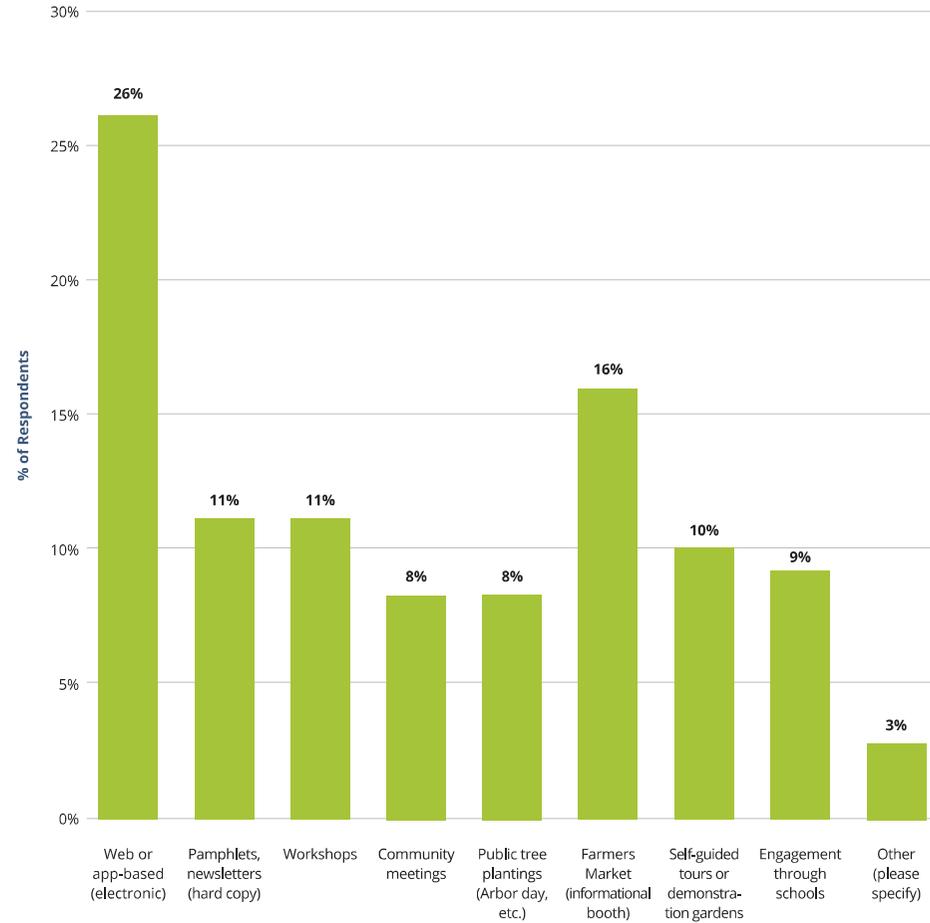


Figure E17. What is the best way to share information with you (choose all that apply)?

Other (Specified)

I own a rental house in Napa and live in Coombsville.

I own rental property in the city

Resident since birth. Homeowner. Local government employee

I am a member of the CA Native Plant Society, Napa Valley Chapter.

I am a consulting arborist who has assignments for Napa Valley Cities, School Districts, private property owners

I serve on the Parks, Rec, and Tree Advisory Commission

Own 3 properties

Table E11. What is your connection to the City of Napa? Other, Specified

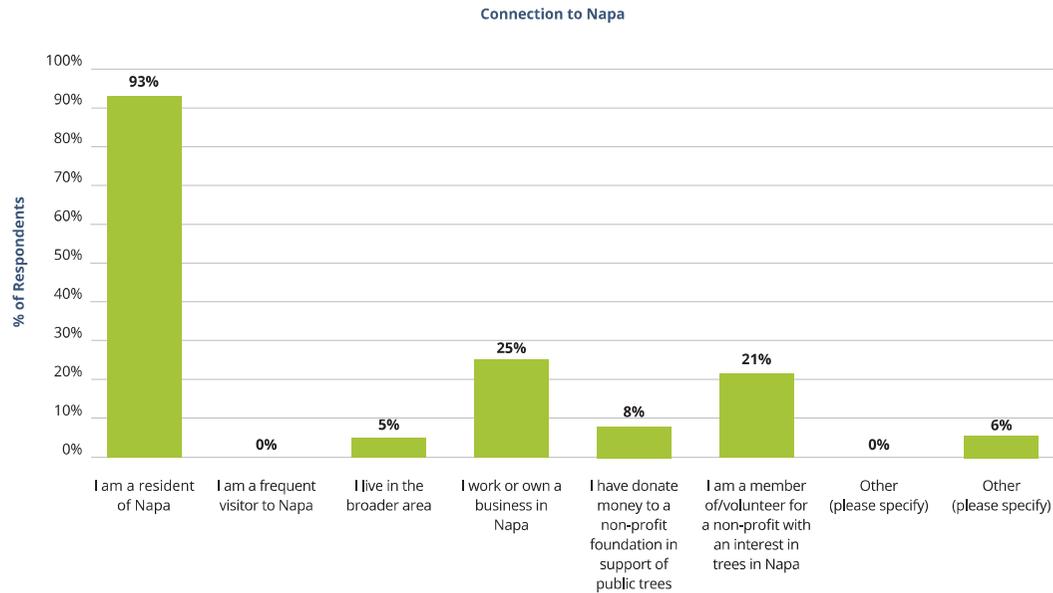


Figure E18. What is your connection to the City of Napa (choose all that apply)?

Summary of Open-Ended Responses

Reoccurring topics, followed by the number of times mentioned, are summarized below:

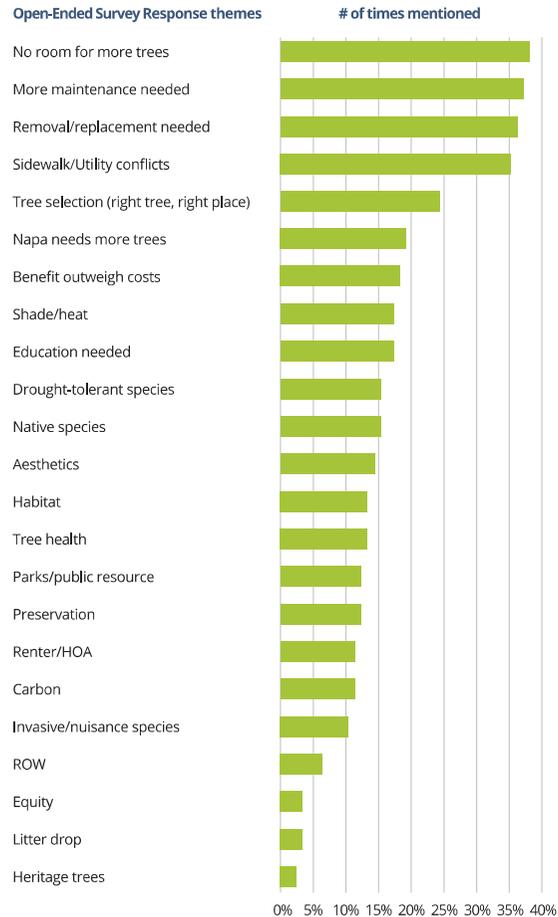


Figure E19. Open-Ended Responses.

No Room for More Trees | 38

- The top reason that property owners are not willing or able to plant additional trees on their private properties is a lack of available space. Many homeowners feel that their yards are already at capacity and could not support additional trees. (mentioned 33x in q10)
- Residents are concerned about trees having adequate soil volume and rooting space, especially when planted in sidewalk strips. "Right tree, right place" came up often in this and other contexts.

Maintenance - More Needed; Too Costly; Improper | 37

- Napa residents are concerned that the City's trees (especially large, mature trees) are not receiving adequate care from the City and more maintenance is needed.
- Many survey respondents felt that additional maintenance is needed, but is not being provided because it is too costly, so additional funding or resources are needed.
- In addition to neglect, some survey respondents are also concerned about the quality of maintenance that trees are receiving (i.e. improper pruning leading to poor structure throughout the life of the tree)

Removal/Replacement | 36

- One of the most frequent concerns expressed by survey respondents was infrastructure conflicts between trees and sidewalks, streets, utilities, etc.
- Some residents are eager to remove and replace trees that are not planted in proper locations, i.e. conflicting with infrastructure and creating safety hazards, again citing "right tree right place"
- Other residents would prefer to modify the infrastructure and preserve the trees
- Many respondents also expressed disappointment that large, mature trees in their neighborhoods were removed but never replaced, creating both a lack of canopy and potential safety hazards due to the empty tree wells.
- Many residents also expressed an interest in removing invasive species and replacing them with native and/or drought tolerant

species that will be better suited to Napa's changing environment amidst climate change, drought, increasing fire risks, etc.

Sidewalks/Utilities | 35

- Same as above - tree and infrastructure conflicts are one of the top concerns on Napa residents' minds.

Tree Selection (Right Tree, Right Place) | 24

- Also similar to the previous two themes - Napa residents are aware of the concept of tree species and site selection and do not feel that the City is currently doing the best it could be at implementing this concept.
- "Right tree, right place" came up many times in various contexts:
 - Choosing species that are appropriate for Napa's unique environment (sometimes citing a preference for California native species, and other times citing a need for drought-tolerant species which may or may not be native)
 - Choosing species that have an appropriate growth rate and form for their planting site, especially if the trees are being planted in sidewalk strips along the right-of-way
 - Selecting and/or creating appropriate growing spaces that allow adequate soil volume and rooting space when large, tall-growing shade trees are desired, such as along sidewalks and bike trails to encourage alternative modes of transport

Need More Trees | 19

- Many survey respondents expressed a desire for more trees throughout Napa, especially to replace mature hazardous trees that needed to be removed and in underserved neighborhoods

Benefits Outweigh Costs / None | 18

- When asked about the top 3 downsides of trees, the most common open-ended response was that they did not feel there were negative consequences of trees and/or the benefits far outweighed any potential downsides (12 responses in Q6)

Education | 17

- Residents desire more education about trees - especially appropriate species/site selection when planting.

Shade/Heat | 17

- One of the most frequently referenced benefits of trees across all questions was their ability to provide shade, cool neighborhoods, reduce the urban heat island effect, and even encourage alternative forms of transportation by keeping trails cooler.

Native Species | 15

- Many survey respondents expressed a desire for more California native species and/or reduction in the amount of non-native species in Napa's urban forest.
- Several residents also brought up Napa's approved planting list — specifically, that it needed to be updated/improved and more education on the subject was needed

Drought Resistant Species; Water; Fire Risk | 15

- In addition to native species, community members are interested in increasing the amount of drought- and heat-tolerant species in their urban forest, particularly amidst a changing climate and constantly increasing fire risk.
- Some residents are concerned that existing trees are not getting enough water and are wary of planting new trees due to a lack of water availability.

Aesthetics | 14

- Survey respondents have generally positive views towards trees, and many feel that having lots of large, mature trees where they live is a quintessential part of the character of their community. (many good quotes about this.)

Tree Health | 13

- Survey respondents felt that assessing tree health and providing the maintenance necessary to keep trees healthy is one of the most important services that the City provides.

- However, some residents worry that City trees are not receiving adequate maintenance in order to remain healthy, and would like to see an increase in services and funding.

Habitat | 13

- Napa residents deeply value the benefits of trees to other wildlife, particularly pollinators, and would like to see trees planted in an intentional way that makes them a part of a complete healthy ecosystem.

Preservation | 12

- Survey respondents are aware of the tradeoffs between tree preservation and removal/replacement, and would prefer to see trees preserved whenever it is safe and feasible.
- Survey respondents also understand that the greatest tree benefits (especially to carbon, shade, etc.) come from large, mature trees, and those benefits cannot be replaced immediately if such trees need to be removed and replanted.
- Several residents expressed a desire to preserve trees rather than sidewalks where infrastructure conflicts exist.

Parks/Public Resource | 12

- Napa residents value the services that P&R provides in creating a healthy urban forest in parks and other spaces as a public community resource

Carbon | 11

- Another frequently cited benefit of trees is their ability to sequester and store carbon
- Residents would like to see trees planted (right tree, right place) in a way that will allow them to grow to their maximum potential and store as much carbon as possible
- Several responses specifically referenced Napa's other climate/ carbon goals and policies and that they would like to see trees integrated into those as well

Renter/HOA | 11

- The second most frequently-cited reason for being unable to plant trees on private property after a lack of available growing space was being a renter or member of an HOA that prohibited it

Invasive Species | 10

- Community members are concerned that there is an overrepresentation of non-native and/or invasive species in Napa's urban forest.
- Residents would like to see nuisance trees removed and replaced with more appropriate species, especially in areas where it will improve the ecosystem as a whole.
- Species mentioned: tree of heaven; glossy privet; Crape myrtle

Rights-Of-Way⁶

- Survey respondents value the unique benefits of trees planted along roadways and appreciate the services that P&R provides to plant and maintain trees in rights-of-way (but it did not get brought up as much as parks)

Litter drop | 3

- Several survey respondents stated that sap, fruit, and other litter drop from trees was one of the largest or only downsides about them.
- Residents would like to see trees that do not drop litter planted in places like along sidewalks (again, right tree - right place), including removal/replacement if necessary

Equity | 3

- Truthfully, this term came up a surprisingly low amount of times. It does not appear to be a major concern of community members and might not make a

Heritage Trees | 2

- The desire for the creation of a heritage tree program was mentioned a couple times (which indicates a need for increased education or outreach since this already exists)

